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# **WALLOPS OCCUPATIONAL SAFETY & HEALTH MANUAL (WOSHM-2006)**

**FOR**

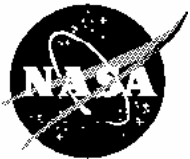
**WALLOPS FLIGHT FACILITY (WFF)**

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**April 6, 2006**

**WFF Safety Office**

**Suborbital and Special Orbital Projects Directorate**



National Aeronautics and  
Space Administration

**Goddard Space Flight Center**  
Wallops Flight Facility  
Wallops Island, Virginia 23337-5099

WFF Occupational Safety & Health Manual

April 6, 2006

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# Chapter 1

## How to use this Handbook

### 1. Who must follow this handbook?

This handbook applies to anyone at WFF or WFF remote sites, unless exempted in a specific chapter. The handbook applies to operations involving WFF personnel or equipment at non-WFF locations, including foreign countries.

a. The following table tells you who must follow this handbook.

<i><b>If you . . .</b></i>	<i><b>Then you must follow . . .</b></i>
Are a federal employee	This handbook unless you work at a site that involves unique military equipment and operations
Are a (Permanently Badged) WFF contractor	This handbook as called out in your contract's statement of work
Work at a WFF remote site (such as National Scientific Balloon Facility) as a civil service employee or contractor employee	a. all chapters that don't exempt you b. remote site requirements that meet the intent of any chapter that exempts you
Are a non NASA or non contract employee	This handbook while on WFF property

b. If you are a federal employee working in a private employer's facility, the WFF safety and health program covers you. Although NASA may not have the authority to correct hazardous conditions in a private sector workplace, NASA must make sure your working conditions are safe and healthful. NASA does this by administrative controls, personal protective equipment, or your withdrawal from the private employer's facility.

c. If you are a private employer, neither Executive Order 12196, "Occupational Safety and Health Programs for Federal Employees," nor this handbook relieves you or your employees of any rights or responsibilities under the Occupational Safety and Health Administration (OSHA).

### 2. What about remote sites?

This handbook applies to you if you are at any WFF remote site unless specific chapters exempt you. If a chapter exempts you,

you must develop your own requirements that meet the intent of that chapter.

- a. The local Safety Office or equivalent will carry out the responsibilities of the Safety Office at your site.

### 3. How should I use this handbook?

You don't need to read this entire handbook. You need to know and follow only the safety and health requirements that apply to your job.

### 4. What parts of this handbook must I follow?

You must follow any part of this handbook that applies to your job.

### 5. What chapters must I follow?

This table tells you which chapters you must follow.

<i>If you are a . . . Then you must . . .</i>		<i>From Chapter . . .</i>
WFF employee	Know about employee involvement	1
	Follow WFF's Safety Policy and basic requirements	2
	Know your rights and responsibilities	3
	Know what to do in an emergency	4
	Know how to get medical help if you are injured on the job	5
	Know how to identify, report, and correct hazards	6
	Know how to report close calls and mishaps	7
	Know about safety and health inspections	8
	Know about safety and health training and take the training when required	9
	Know about workers compensation	11
	Know about fire safety	13
	Know about safety and health standards	14
	Know the committees and councils WFF has for Safety and Health	15
	Know how your organization will be evaluated on safety and health	16
Are a contractor	Know about WFF's basic safety and health requirements for contractors	2

WFF employee who does hazardous tasks	Follow the requirements for hazardous operations	10
WFF employee who does job hazard or hazard analysis	Follow the requirements for job hazard and hazard analysis	12
Fire warden	Know your responsibilities	13
Facility Operation Manager	Follow WFF's Safety Policy and basic requirements	1
	Know your basic rights and responsibilities	3
	Know your specific responsibilities	3-13
	Know about safety and health standards	14
	Know the committees and councils WFF has for safety and health	15
	Know what safety and health records you must keep	13
	Know how you will be evaluated on safety and health	16
WFF supervisor at any level	Follow WFF's Safety Policy and basic requirements	2
	Know your basic rights and responsibilities	3
	Know your specific responsibilities	3-13
	Know about safety and health standards and how to get variances if needed	14
	Know the committees and councils WFF has for safety and health	15
	Know what safety and health records you must keep	13
	Know how you and your organization will be evaluated on safety and health	16

## 6. What if this handbook conflicts with the safety or health requirements of my organization?

This handbook takes precedence over all other WFF documentation in safety and health except for more stringent requirements that individual WFF organizations develop. If your organization has more stringent requirements than are in this handbook, you must follow them. If you find any less stringent WFF requirements than are in this handbook, bring them to the immediate attention of the Chief of WFF's Safety Office.

## 7. How do I request changes to this handbook?

Submit a written change request to the Safety Office that includes what you want to change and why. You may use an informal letter or electronic mail. The Safety Office will

review your request and tell you its decision to approve, modify, or disapprove your request.

## **Chapter 2**

# **WFF's Safety and Health Policy and Program**

### **1. Who must follow this chapter?**

You must follow this chapter if you work at WFF or a WFF field site. You must observe WFF's Safety Policy and these basic requirements as you do your job.

### **2. What is WFF's Safety Policy?**

WFF's Safety Policy is the following:

- a. Prevent mishaps from occurring.
- b. Remove or control hazards in the workplace.
- c. Ensure that management maintains a safe and healthful workplace.
- d. Train employees to work safely and watch out for others.
- e. Increase productivity and performance by working safely.

### **3. What is the goal of WFF's Safety and Health Program?**

The goal of WFF's safety and health program is to have all employees own the Safety and Health Program by:

- a. Knowing the hazards of their job
- b. And how to protect themselves from those hazards.

### **4. What are the principles behind WFF's Safety and Health Program?**

We at WFF observe the following principles in our safety and health program:

- a. We will take all practical steps to avoid loss of life, injury to personnel, property loss, mission failures, and test failures. To do this, we must have good safety and health programs and organizations. Every civil servant and contractor is entitled to a safe and healthful workplace whether he or she works full time or part time.
- b. We give all managers and supervisors the responsibility for employee safety and health and the authority to enforce it. Safety and health is an integral part of each managers and supervisor's responsibilities.

- c. We make safety and health a line organization function. Safety and health personnel will oversee and support the line organizations in safety and health.
- d. We empower personnel from the Safety Office to stop any operations that pose a clear, present, and unwarranted danger to any person or NASA property. Don't resume such operations until the danger is removed.
- e. We must have a safety and health program that is proactive rather than reactive. This means preventing mishaps by finding and controlling hazards before mishaps happen.
- f. We must learn from our mistakes and share our lessons with others.
- g. We must constantly improve our safety and health program.
- h. We must have open lines of communication between safety and health personnel and other disciplines such as product and quality assurance.
- i. We will use the Occupational Safety and Health Administration's Voluntary Protection Programs requirements as the criteria to measure the effectiveness and excellence of our safety and health program.
- j. When we make decisions, we must evaluate the hazards and risks our workers face with all operations or systems.

## **5. What about employees participating in safety and health?**

Employee involvement is an essential part of our safety and health program. As a WFF employee, you are encouraged to actively participate in WFF's safety and health program in a meaningful way. You are a member of the safety and health team. You may participate in the following ways:

- a. Work on safety and health committees.
- b. Work on ad hoc groups to solve safety and health problems.
- c. Train other employees in safety and health matters.
- d. Conduct job hazard analyses and other kinds of safety and health analyses.
- e. Work on committees that plan and conduct safety and health awareness campaigns.
- f. Become a safety representative, assistant safety representative, or fire warden.
- g. Be a safety observer for hazardous operations.
- h. Work on teams that audit safety and health programs, inspect facilities and operations, sample work areas, or investigate mishaps and close calls.



- i. Analyze data from your workplace such as health samples, mishap trends, close call trends, or inspection reports.
- j. Identify and report hazards, and implement corrective actions if possible.

## **6. What are WFF's basic safety and health requirements for contractors?**

If your company has a contract or subcontract with WFF, you must follow all WFF safety and health requirements. We will call out these requirements in your contract. You must have an effective safety and health program while you work at WFF. WFF will monitor your program for performance and ensure that:

- a. You maintain an effective safety and health program and follow all safety and health requirements that apply to your contract.
- b. You enforce our safety and health requirements for your contract.
- c. You promptly control all hazards that are identified.
- d. You submit injury and lost workday data.
- e. Failure to maintain an effective Safety and Health Program could result in impacts on performance evaluation and other administrative penalties. These penalties could include ending your contract if you willfully or repeatedly violate our requirements.
- f. We consider your safety and health program when we select you as a contractor and evaluate your contract performance.

## **7. What are WFF's basic safety and health requirements for work areas and equipment?**

These are WFF's basic requirements about work areas and equipment:

- a. We must pay special attention to facilities involving multiple organizations, contractors, and shifts. In these facilities we must:
  - Clearly define safety and health responsibilities in these facilities.
  - Promptly communicate safety and health information to all people in these facilities.
- b. We must recognize and control hazards in every work area and assess the risks of those hazards.
- c. We must maintain our facilities and equipment so that they

remain safe.

- d. We must maintain all safety and health equipment so that it works when we need it.

## **8. What are WFF's basic safety and health requirements for public safety?**

We must take measures to protect the general public from injury or illness from WFF operations. Protecting the public includes:

- a. Analyzing WFF operations for hazards to the public and controlling those hazards.
- b. Restricting access to hazardous areas at WFF.
- c. Working with the outside communities to make the public aware of hazards from WFF operations.
- d. Working with local officials on emergency planning and community safety activities.

## **9. What must I do as a manager to carry out WFF's safety and health program?**

You must ensure that you carry out your responsibilities as part of WFF's safety and health team. You must ensure that:

- a. You budget for correcting hazards and buying safety equipment.
- b. You maintain current information on safety and health issues from sources such as requirements, magazines, or standards.
- c. Your personnel are trained in safety and health.
- d. Responsibilities for safety and health that are assigned within your organization are carried out.
- e. Adequate expertise in safety and health is available within your organization.
- f. Personnel are held responsible for safety and health and are accountable for their performance.
- g. Processes are in place for reviewing and evaluating your organization's safety and health program.

## **10. What about funding for safety and health items?**

WFF must provide adequate funding for its safety and health program. Line organizations are responsible to have funding for:

- Correcting hazards in the work place.

- Providing required personal protective equipment.
  - Maintaining equipment in good working order and in compliance with applicable standards and regulations.
  - Doing any other safety and health tasks they need to do.
- b. The Safety Office, Office of Human Resources and Suborbital and Special Orbital Projects Directorate must request funding for:
- Adequate safety, health, and emergency response personnel to oversee WFF's safety and health program.
  - Safety and health training.
  - Safety, health, and emergency response equipment for such things as sampling work areas, analyzing samples, and fighting fires.
  - Promotional items for safety and health awareness and motivation.
  - Technical information such as books, standards, periodicals, and publications.
  - Occupational health activities such as monitoring noise or radiation levels.
  - Contracts to do safety and health tasks.

# **Chapter 3**

## **Responsibilities and Rights for Safety and Health**

### **1. Who must follow this chapter?**

You must follow this chapter if you work at WFF or a WFF field site. You must carry out your safety and health responsibilities as you do your job. You should know and exercise your rights.

### **2. What does this chapter cover?**

This chapter tells you your general responsibilities and rights under WFF's Safety and Health Program.

See each chapter that applies to your job or facility for more specific responsibilities.

### **3. What are my responsibilities as a WFF employee?**

As a WFF employee, you are responsible for the safety and health of yourself and your coworkers. You must:

- a. Follow safety and health standards, rules, regulations, and guidelines issued by the Occupational Safety and Health Administration (OSHA), NASA, and WFF.
- b. Correct hazards yourself if possible and report the corrective actions you have taken to your supervisor. Use established procedures in the workplace to report and correct hazards.
- c. Get emergency medical care if you suffer a job-related injury or illness (Chapter 5, Paragraph 3).
- d. Promptly report mishaps and close calls (Chapter 7, Paragraphs 4 and 6).
- e. Cooperate with safety and health personnel during inspections, surveys, and investigations.
- f. Use personal protective equipment when required to do so by safety and health standards, good work practices, or your supervisor.
- g. Be able to describe your individual responsibility for safety and health.
- h. Do your job in a safe and responsible manner.

#### **4. What are my rights as a WFF employee?**

As a WFF employee, you have the right to:

- a. Stop or refuse to do any task if you believe that:
  - It will put you or your coworkers at risk of death and/or serious injury
  - There is no time to resolve the matter through normal hazard reporting channels
- b. Leave any area where imminent danger conditions exist as described in Subparagraph a above.
- c. Report hazards as described in Chapter 6, "Reporting and Correcting Hazards," of this handbook and have your name kept confidential if you want.
- d. Be a member of or be represented on safety and health committees.
- e. Participate in safety or health activities without having to take leave.
- f. Be trained about the hazards of your job and how to protect yourself prior to starting work.
- g. Have access to the following on request:
  - Safety and health requirements that apply to your job
  - Your medical exposure records and to have your records protected under the Privacy Act of 1974
  - WFF's log and summary of occupational injuries and illnesses (OSHA Form 300 or its equivalent)
  - Results of inspections and mishap investigations
  - NASA Safety Reporting System (NSRS)
- h. Have information about WFF's safety and health program.
- i. Comment on proposed NASA and WFF Occupational Safety and Health standards.
- j. Be free from restraint, interference, coercion, discrimination, or reprisal for:
  - Reporting hazards
  - Participating in safety and health activities
  - Exercising any other rights you have from this handbook or federal law

WFF is seeking recognition under OSHA's Voluntary Protection Program (VPP). Under VPP, you still have the same rights as you would otherwise, including the right to complain to OSHA. (See Chapter 6)

## **5. What do I do if I have any problems exercising my rights?**

You may file a complaint or grievance through:

- a. Informally with the Chief of Safety or the Chairman of the Executive Safety Council
- b. Grievance procedures in the agreement between WFF and the American Federation of Government Employees or in agreements with other recognized labor organizations.
- c. The NASA Office of the Inspector General.

The WFF Executive Safety Committee must be told of any allegations of reprisal.

## **6. What disciplinary action can I face if I don't do my job in a safe manner?**

You must always do your job safely. If you are a WFF civil service employee, you can face disciplinary action for not doing your job safely. Disciplinary action can range from verbal and written reprimands to being suspended or fired. If you are a contractor employee, you can face disciplinary action under your company's policies.

## **7. What are my responsibilities as a guest researcher or visitor at WFF?**

If you are doing any research or other work at WFF as a temporary guest, you must:

- a. Make sure your work doesn't interfere with WFF facilities or operations.
- b. Know and follow all safety and health requirements for the area where you are working. This includes using any required personal protective equipment.
- c. Be trained and certified for any hazardous operations you will be doing.
- d. Notify the WFF Safety Office in the event of Mishaps, Close-Calls, injuries, identified hazards or unsafe work conditions.

## **8. What are my general responsibilities as a WFF supervisor at any level for safety and health?**

As a WFF supervisor at any level, you are responsible for the safety and health of everyone who reports to you. You must:

- a. Set an example of good safety and health practices by:
  - Showing interest in safety and health.
  - Being involved in safety and health activities.
  - Having strong personal safety awareness.
  - Schedule adequate time for employee safety training on a reoccurring or as needed basis.
- b. Provide visible leadership in safety and health by:
  - Showing your commitment to safety and health.
  - Following up on safety and health matters.
  - Establishing clear lines of communication with your employees.
  - Promoting unrestricted access to top WFF management for your employees.
  - Providing all your employees high-quality safety and health protection including contractor employees.
- c. Report lessons you learn about safety and health.
- d. Exercise adequate control over both civil service employee and contractor operations.
- e. Attend safety meetings within your organization.
- f. Make sure that you have a budget for such things as correcting hazards in your work areas and buying required safety equipment.
- g. Ensure that safety and health related corrective actions are implemented in a timely manner.

## **9. What are my specific responsibilities as a WFF supervisor at any level for my work areas and employees?**

As a WFF manager at any level, you must:

- a. Make sure hazards in your areas are identified and controlled.
- b. Report and investigate mishaps and close calls to prevent them from happening again.
- c. Make sure you have requirements or procedures to cover

safety and health issues in your work areas.

- d. Make sure any managers and employees who report to you fulfill their responsibilities for safety and health.
  - Assign responsibilities for safety and health to your employees. Document these responsibilities in their positions' descriptions.
  - Hold them accountable for their performance in safety and health. Include safety and health in their performance reviews. Document how you hold them accountable.
- e. Make sure your employees are trained to work safely and document their safety training.
- f. Make sure any hazards to the public are eliminated and controlled.
- g. Involve your employees in safety and health decisions and activities.
- h. Keep records on mishaps, close calls, and hazards in your work areas. Review the status of mishap, close call, and hazard reports. Look for trends in these reports and report trends to the appropriate safety council or safety office.
- i. Analyze your safety and health data such as mishap or inspection reports and use your analysis to improve your safety and health program. Tell your employees about your analysis.
- j. Include safety and health agenda items in your meetings.
- k. Make sure the Safety Office is involved in evaluating:
  - Any new facilities, equipment, materials, or processes.
  - Any changes to your facilities, equipment, materials, or processes.

## **10. What are my rights as a WFF manager at any level?**

As a manager, you are also a WFF employee. You have the same rights as any other employee.

## **11. What are my responsibilities as a WFF first line supervisor?**

As a WFF first line supervisor, you are responsible for the safety and health of your employees. You must:

- a. Make sure your employees know about:
  - WFF's safety and health program and the protection it gives them.
  - Their rights and responsibilities from this chapter and



federal law (such as Executive Order 12196, 29 CFR 1960, "Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters," and 29 CFR 1977, "Discrimination Against Employees Exercising Rights Under the Williams-Steiger Occupational Safety and Health Act of 1970").

- How they can participate in safety and health activities.
- b. Make sure your employees follow the safety and health requirements that apply to their jobs.
- c. Make sure your employees know what to do in all emergencies.
- d. Make sure your employees immediately report all hazards, close calls and mishaps to you. Reporting what you cannot mitigate to your supervisor.
- e. Protect your employees in imminent danger situations.
- f. Provide a safe and healthful workplace by:
  - Identifying hazards through hazard analyses or job safety analyses.
  - Controlling them as your resources allow.
  - Maintain on site and available to all employees, Material Safety Data Sheets for the work being performed at the worksite.
- g. Make sure your employees know the hazards with their workplace and duties and what precautions they must take to protect themselves (such as safety devices, caution and warning devices, and personal protective equipment).
- h. Cooperate with and assist safety and health personnel as they do their jobs.
- i. Enforce safe practices. Reprimand employees for unsafe behavior if necessary. Reward employees for excellent safety and health performance.

## **12. What are my responsibilities as a facility operations manager?**

As a facility operations manager, you are responsible for the safety and health in your facilities. You must:

- a. Make sure that your facility and all operations in your facility follow federal, NASA, and WFF requirements.
- b. Make sure your building has a poster that tells you about NASA's and WFF's safety and health program. The Safety Office will provide a poster that meets 29 CFR 1960.12(c), "Dissemination of Occupational Safety and Health Program Information."
- c. Make sure your building has at least one poster that tells

you about WFF's Close Call Reporting System if employees normally occupy your facility.

- d. Post safety information in your facility as necessary.
- e. Accompany safety office personnel during safety inspections in your building.
- f. Ensure facility safety problems are corrected.
- g. Follow safety and health guidance as found in the Supervisors Safety Guide for WFF.

### **13. What are the responsibilities of WFF's Senior Official?**

WFF's Senior Official is also the designated safety and health official for WFF. The designated safety and health official must:

- a. Provide resources, guidance, and direction for implementing WFF's safety and health program.
- b. Make sure WFF's safety and health program follows all federal regulations and NASA requirements.
- c. Make sure WFF has an organization to carry out WFF's safety and health protection program. This organization must include:
  - Safety and health responsibilities at appropriate levels.
  - Adequate personnel to carry out WFF's safety and health program, including access to Certified Safety Professionals and Industrial Hygienists.
- d. Publish Senior Official Safety Philosophy and Policy for all employees.
- e. Make sure all WFF organizations have adequate budgets to carry out WFF's safety and health program.
- f. Make sure WFF has requirements and procedures to carry out WFF's safety and health program.
- g. Make sure WFF has goals and objectives to reduce occupational mishaps.
- h. Make sure WFF has methods to evaluate WFF's safety and health program effectiveness.
- i. Set priorities for correcting workplace hazards.
- j. Make sure WFF personnel purchase, maintain, and use the right personal protective equipment and safety equipment.

### **14. What are the responsibilities of the Safety Office?**

The Safety Office must:

- a. Help the line organizations to carry out WFF's safety and health program.
- b. Oversee WFF's safety and health program.
- c. Have processes to fulfill the requirements in this handbook.
- d. Provide safety and health training for WFF employees.
- e. Make sure NASA Safety Reporting System posters are posted in major buildings.
- f. Follow the guidance set forth from senior management on VPP.

## **15. What are the responsibilities of WFF contractors?**

If your company has a contract with WFF, you must:

- a. Provide for the safety and health of your employees no matter where they work (such as in WFF-owned or leased facilities, with government equipment, or together with government employees).
- b. Notify your Contracting Officer and the Safety Office if you find any NASA facilities or NASA operations that don't follow 29 CFR 1910, "Occupational Safety and Health Standards, General Industry," or 29 CFR 1926, "Occupational Safety and Health Standards, Construction Industry."
- c. Provide products, equipment, and services that meet WFF, NASA, and OSHA safety and health requirements in design and operation without modifications or restrictive procedures.
- d. Make sure your subcontractors (if any) follow WFF, NASA, and OSHA safety and health requirements. Document this "flow down" of safety and health responsibility.
- e. Allow your contracting officer and WFF safety or health personnel access to your operations for safety or health inspections.
- f. Handle OSHA citations against your company as described in Paragraph 2.6, Contractor Citations of NPG 8715.3, "NASA Safety Manual."

# Chapter 4

## Emergency Action and Planning

### 1. Who must follow this chapter?

You must follow this chapter if you work at WFF or a WFF field site. If you are a supervisor, facility manager, or director, Paragraph 16 of this chapter lists your responsibilities.

### 2. What does this chapter cover?

This chapter tells you what to do in an emergency of any kind and what emergency planning WFF must do.

## *Emergency action*

### 3. What emergencies must I report?

You must report any emergency that you see. This includes any fire, no matter how small. Report fires that have been extinguished. They may still be smoldering and could re-ignite.

Remember, your emergency number is 911 at WFF. You must call your emergency number if you see an emergency.

You must keep the emergency scene as undisturbed as possible. If you don't, valuable evidence for the investigators could be destroyed.

**4. How will I be told that there is an emergency? You could be told of an emergency in a number of ways. The most common are:**

- a. A building fire alarm or The WFF employee alarm system in the ordnance area.
- b. The WFF Paging System.
- c. The Supervisory Call List.
- d. Word of mouth.

**5. What must I do in an emergency?**

If you are involved in an emergency, you must take the actions in this table for the kind of emergency it is.

<i><b>If you . . . Then . . .</b></i>	
<b>.</b>	
Hear a building fire alarm	<ul style="list-style-type: none"> <li>• Leave the building immediately using the exit routes shown on the evacuation diagram on your floor.</li> <li>• Don't use the elevators.</li> <li>• Shut all doors and windows, if possible, before evacuating your room.</li> <li>• Use an alternate route if you can't use the primary exit route.</li> <li>• Shut down hazardous operations and secure classified material or take classified material, that cannot be secured, with you if at all possible.</li> <li>• Go to a "safe area" designated by your supervisor so he or she can account for you.</li> <li>• Move your group to another area if the "safe area," isn't safe.</li> <li>• Remain at least 200 feet (marshaling area) from the building until you get further instructions.</li> <li>• NEVER re-enter an evacuated area until declared safe by Emergency personnel on the scene.</li> </ul>

## See a fire

- Evacuate people from the building by pulling the lever on a fire alarm pull box. This will ring the building fire alarm bells and signal the WFF Emergency dispatcher.
  - Call your emergency phone number from a safe location to make sure the dispatcher got the alarm signal.
  - Say, "I am calling to report a fire..."
  - Tell the dispatcher where the fire is (building and room number), how big the fire is, and what type of fire it is (such as chemical, electrical, or paper).
  - Stay on the line until the dispatcher says you may hang up. The dispatcher may put your call on hold briefly while emergency units are dispatched.
  - Give the dispatcher any information you think would help the emergency personnel find the fire.
  - Tell the dispatcher your name and the extension you are calling from.
  - Meet the Emergency Services personnel to relay vital information.
  - Go to a safe area (marshaling area) designated by your supervisor so he or she can account for you.
  - NEVER re-enter an evacuated area until declared safe by emergency personnel on the scene.
- 

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**If you . . . Then . . .**

## Smell smoke

Smoke may come from many sources such as:

- |                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <ul style="list-style-type: none"> <li>• Fluorescent light ballast</li> <li>• Appliances such as coffee makers and stoves</li> <li>• Jammed paper in a copy machine</li> <li>• Electronics</li> <li>• Welding or cutting</li> </ul> | <ul style="list-style-type: none"> <li>• If it is only a faint odor, Call the emergency phone number (911) and describe the situation.</li> <li>• If you can't find the smoke and the smell gets stronger, or see large amounts of smoke, evacuate people from the building by pulling the lever on a fire alarm pull box.</li> <li>• Call your emergency phone number from a safe location to make sure the dispatcher got the alarm signal.</li> <li>• Say, "I am calling to report that I smell smoke..."</li> <li>• Tell the dispatcher where you smelled the smoke (building and room number).</li> <li>• Stay on the line until the dispatcher says you may hang up. The dispatcher may put your call on hold briefly while emergency units are dispatched.</li> <li>• Give the dispatcher any information you think would help the emergency personnel find the smoke.</li> <li>• Tell the dispatcher your name and extension you are calling from.</li> <li>• Meet the facility operations manager or emergency personnel near the building entrance if possible to relay vital information.</li> <li>• Go to a safe area (marshaling area) designated by your supervisor so he or she can account for you.</li> <li>• NEVER re-enter an evacuated area until declared safe by emergency personnel on the scene.</li> </ul> |
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-

See or are involved in a medical emergency on your site—even if it isn't work-related	<ul style="list-style-type: none"> <li>• Call your emergency phone number (911) from a safe location.</li> <li>• Say, "I am calling to report a medical emergency. Please send an ambulance to..."</li> <li>• Tell the dispatcher where the emergency is (building and room number) and who the injured person is, if you know.</li> <li>• Stay on the line until the dispatcher says you may hang up. The dispatcher may put your call on hold briefly while emergency units are dispatched.</li> <li>• Tell the dispatcher what and how bad the injury is, whether it seems life threatening, and whether the person is conscious or breathing.</li> <li>• Give the dispatcher any information you think would help the emergency personnel find the injured person.</li> <li>• Tell the dispatcher your name and the extension you are calling from.</li> <li>• Have someone meet the emergency personnel near the building entrance if possible.</li> <li>• Don't move the injured person unless he or she is clearly in a life-threatening situation.</li> <li>• Stay with the injured person until medical help arrives.</li> <li>• Make sure trained personnel clean up blood.</li> </ul>
See an explosion, leaking gas, or a chemical spill	<ul style="list-style-type: none"> <li>• Call your emergency phone number (911) from a safe location.</li> <li>• Don't activate any fire alarms or evacuate any buildings if you may be forced to an area of greater danger.</li> <li>• Tell the dispatcher what you saw.</li> <li>• Tell the dispatcher what materials are involved, if you know.</li> <li>• Tell the dispatcher where the emergency is and how big the spill, leak, or explosion is.</li> <li>• Stay on the line until the dispatcher says you may hang up. The dispatcher may put your call on hold briefly while emergency units are dispatched.</li> <li>• Give the dispatcher any information you think would help the emergency personnel find the emergency.</li> <li>• Tell the dispatcher your name and extension you are calling from.</li> <li>• Stay on the line until the dispatcher says you may hang up.</li> <li>• Create a marshal area in an "upwind" area from the gas, chemical or explosion area and stay in your marshaling area until you get further instructions.</li> </ul>

## 6. May I put out a fire with a fire extinguisher?

Don't try to fight fire that you can't safely put out with a hand held fire extinguisher unless you are a member of a trained fire brigade or fire department. You may try to put out a fire if:

a. You or someone else has called the emergency number.

- b. The fire is small.
- c. You are trained to use a portable fire extinguisher. Otherwise, you could put yourself in danger by using the wrong extinguisher or using it improperly.
- d. There is no risk to your safety and the fire isn't between you and an exit.
- e. You know you can safely put out the fire.

WARNING: In closed in areas, such as office spaces, CO<sub>2</sub> fire extinguishers will displace oxygen in the space.

## **7. What if I need help to exit a building?**

You and your supervisor must jointly decide whether you require special help. Examples of physical conditions (temporary or permanent) that may hinder your evacuation are:

- a. Use of wheelchair, crutches, or walkers
- b. Hearing or visual impairments
- c. Pregnancy
- d. Heart or lung conditions
- e. Disabilities hindering mobility
- f. Temporary injuries

Those with the above physical conditions, who cannot exit the building, along with anyone assisting them, should go to the main lobby or remote end stairways and wait for the Fire Department.

## **8. Who responds to WFF emergencies?**

WFF, as an employer, must provide adequate emergency response personnel and equipment to deal with all potential emergencies. A contractor, or local fire departments through mutual aid agreements generally provide these personnel and equipment. All emergency response personnel must be trained to do their jobs safely and effectively. At WFF, the following organizations or individuals are available to respond to emergencies:

- a. Wallops Emergency Services Department (Fire Department) and mutual aid agreements with other surrounding communities on-site at WFF
- b. Health Unit Personnel from the WFF Clinic who back up the Wallops Emergency Services Department
- c. Spill response teams from the Emergency Services Department.



d. WFF Security Force.

If you work at a WFF field site, see your site emergency planning personnel for information on emergency response.

## *Emergency planning*

### **9. What must I know about emergency planning as a WFF employee?**

As a WFF employee, you must:

- a. Know the exit routes you must take to evacuate your floor and the rally point.
- b. Know what emergencies could occur in your work area, how to recognize them, and how to protect yourself if you are in danger.
- c. Know any special emergency procedures for your work area.
- d. Know where you can find the facility emergency plan for your work area.
- e. Follow those procedures if an emergency happens.
- f. Know what special hazards and actions may be present in your work area such as hazardous chemicals, flammables and explosives.

### **10. What emergency planning must WFF do?**

WFF and WFF field sites must:

- a. Identify all emergencies that could happen at that site and how to respond to them.
- b. Have a site-wide emergency plan.
- c. Have the local fire departments review the emergency plan.
- d. Review the emergency plan yearly or after each major emergency.
- e. Have a site-wide emergency drill yearly.
- f. Evaluate the site emergency plan after each yearly drill or after each major emergency. Update the plan if necessary.
- g. Have a fire drill for each building yearly.

### **11. What buildings or work areas must have facility emergency plans?**

Each occupied building at WFF must have a facility emergency plan to protect employees and property if an emergency happens.

## **12. What must a building emergency action plan cover?**

A facility emergency plan must tell you what to do in an emergency. A facility emergency plan must:

a. Cover the following:

- Emergency escape procedures and routes
- FOM personnel assignments and responsibilities
- Procedures for employees who stay behind to do critical tasks before they evacuate
- Procedures to account for employees after evacuation
- Rescue and medical duties for those who perform them if other than the Emergency Services personnel
- How to report emergencies
- Who to contact for more information

b. Establish the following:

- The employee alarm (warning) system
- The type of evacuation to be used in emergency circumstances
- Training of a sufficient number of persons

## **13. What about critical or hazardous areas inside or around WFF facilities?**

Critical or hazardous areas within or around WFF facilities must have a more detailed emergency action plan. Critical areas are locations where an emergency could require a unique response from workers in the area, safety, security, firefighters, or emergency medical personnel.

These critical or hazardous areas include:

- a. Areas with essential electronic equipment
- b. Aircraft hangars
- c. Areas with transformers
- d. Routes used to transport hazardous materials
- e. Any area that stores vital records
- f. Any area that uses or stores large volumes of flammable liquids and explosives

Facility emergency plans must be written separately for these unique areas and contain essentially the same information as

building emergency action plans described above.

Read the individual chapters that apply to your work area for more details on emergency actions you must take in your work area.

#### **14. How do I get help with my emergency action plan?**

Contact the Safety Office at WFF or your site's emergency planners. They will give you advice and review your emergency action plan.

#### **15. Where can I get more information on emergency planning?**

You can find more information on emergency planning in these documents:

- a. 29 CFR 1910.38, "Employee Emergency Plans and Fire Protection Plans"
- b. NPG 8715.3, "NASA Safety Policy and Requirements Document,"
- c. National Fire Protection Association Standard 101, "Life Safety Code"

Check with your community city hall for information in developing a personal emergency action plan to protect your family and loved ones.

### *Responsibilities*

#### **16. Who else has responsibilities for emergency action and planning?**

- a. If you are a **supervisor**, you must:
  - Encourage your employee to participate in emergency planning.
  - Train your employees in your facility emergency plan.
  - Review your emergency action plan following changes in your facility design, write new plans accordingly, and publish and train all employees on the new emergency action plan
  - Designate a specific area around the facility for your employees to gather.
  - Account for your employees after an evacuation.

- Make sure your employees follow the facility emergency plan.
  - Make sure your employees follow instructions from fire wardens and emergency response personnel during an emergency.
  - Make arrangements for any of your employees who will need help exiting your building because of physical limitations.
  - Hold a briefing with employees after each drill or emergency to verify whether the facility emergency plan worked well. Solicit employee recommendations to improve the emergency action plan and update it accordingly. Retrain all employees in the revised procedures to make sure they understand.
  - Review your emergency plan yearly and forward a copy to the Safety Office for review.
- b. If you are a **facility operations manager**, you must:
- Make sure each of your buildings has a facility emergency action plan.
  - Be aware of any special hazards in your building.
  - Make sure your building occupants are trained on your emergency action plan.
  - Know the evacuation routes in your facility and make sure they are kept clear.
  - Be aware of employees in your facility who will need help exiting the building because of physical problems. Make sure they have made arrangements with their supervisors.
  - Work with your building Fire Wardens and supervisors to ensure rapid, safe evacuations, and quick employee accountability.
  - Report to responding emergency personnel to brief them on the situation at your facility and tell them if anyone needs to be rescued. Stay at the emergency command post to help emergency responders and act as liaison between the emergency personnel and facility employees who may need more information.
  - Report any missing employees who may be in danger in the evacuated facility to arriving emergency personnel, preferably to the Fire Chief or a security officer.
  - Designate an alternate FOM in the event you are away and ensure they are trained in their responsibilities.

c. If you are a **fire warden**, you must:

- Determine who is present on each floor.
- Canvas your assigned areas and other areas if another Fire Warden is known to be absent. Knock on the mechanical room and restroom doors and remind anyone inside to evacuate the building.
- Indicate to other floor Fire Wardens that their area(s) have been cleared and you all can leave the floor (using voice or hand signals).
- Report to the Fire Chief or Facility Operations Manager when exiting the building at the designated area. Give them an "all clear" or tell them of any problems encountered.

b. If you are an **organizational director (Codes 200, 500, 800, etc.)** at WFF, you must:

- Make sure that your facilities have facility emergency plans.
- Make sure your facility operations managers and alternates are trained in emergency action and planning.
- Make sure your employees know about all possible emergencies and what to do for each possible emergency.

# Chapter 5

## Medical Treatment, First Aid, and Medical Surveillance

### 1. Who must follow this chapter?

You must follow this chapter if:

- a. You work at or visit WFF.
- b. You are a supervisor. Paragraph 12 of this chapter lists your responsibilities.

If you work at a WFF field site, you must follow your local procedures and requirements that meet the intent of this chapter.

Paragraph 16 of this chapter also lists the responsibilities of WFF field sites, the WFF Health Unit, and the Safety Office.

### 2. What does this chapter cover?

This chapter tells you how to:

- a. Get medical treatment for injuries, illnesses, or other medical problems on the job.
- b. Decide which workers require medical screening examinations and tell you how to request those examinations.

## *Medical treatment and first aid*

### 3. What must I do if a coworker or I suffer an injury or illness on the job?

You must report all injury or illness to your supervisor. You must also get prompt medical treatment or first aid at the WFF Health Unit or the health clinic at your site.

Remember, your emergency number is: 911 at WFF. You must call your emergency number if you see an emergency.

If you or someone else suffers an illness or injury, or has a medical problem, such as dizziness or vomiting, on the job, you must:

- a. Report the injury or illness to your supervisor.

- b. Take the injured person to the Health Unit if the injury or illness is minor. Call your emergency number and request an ambulance if the injury is serious or you are unsure about what to do.
- c. Never move an unconscious or seriously injured or ill person unless he or she is in physical danger.
- d. Send someone out to meet the ambulance if possible.
- e. Stay with the injured or ill person until medical help arrives.

#### **4. What if I think I've been exposed to a hazardous material or condition?**

Whether you notice any symptoms or not, you must report the incident to the Health Unit and to your supervisor immediately.

#### **5. What if I work outside of normal working hours?**

If the Health Unit is closed, call the Emergency Services Department (Fire Department), ext 911. You must also report any job-related injury or illness to the Clinic and to your supervisor during the next working day.

#### **6. What if I don't notice my injury or illness until I am off duty?**

If you don't notice your injury or illness until you're off duty, you must report it to your supervisor and the Health Unit during the next working day.

#### **7. What if I see my own doctor or go to a hospital for a job-related injury or illness?**

If you see a doctor or go to a hospital, as a result of a work related illness/injury you must:

- a. Report your doctor's visit to your supervisor and the Health Unit at the start of the next working day.
- b. If you are hospitalized as a result of a work related injury/illness after normal duty hours, report being admitted to the hospital to your supervisor as soon as possible.
- c. Check on workers' compensation benefits by contacting:
  - The Federal Employee's Workers Compensation Official at 66-7409 during the next working day if you are a civil

servant.

- Your company during the next working day if you are a contractor.

## **8. How do I transport an injured or ill person to the Health Unit or to a hospital?**

To transport an injured or ill person:

- a. Get an ambulance by calling your emergency number unless medical personnel tell you to do something different.
- b. Take him or her to the Health Unit if possible if the injury or illness is minor. The Health Unit may move the person to another medical facility if medical personnel think it is necessary.

## **9. When may I return to work after an injury or illness from my job?**

If you have casts or braces, or crutches, the Health Unit and referred attending doctor must decide when you may return to work and whether you must be on light duty.

# *Medical surveillance*

## **10. What is medical surveillance?**

Medical surveillance includes medical screening exams and other tools used to monitor workers who could have been exposed to hazardous substances. It also shows that workers are physically and mentally fit to do certain hazardous or critical operations. It also helps recognize and evaluate occupational illnesses and injuries. Medical surveillance includes:

- a. Identifying workers who need examination.
- b. Performing and documenting those examinations.
- c. Informing workers of the results.
- d. Training.
- e. Evaluating data for trends and sub-clinical effects of exposure.

## **11. When must I be placed in a medical surveillance program?**

WFF uses a hazard based method to decide which jobs or operations require medical surveillance. The need for medical surveillance is based primarily on exposures determined by



industrial hygiene surveys. You may be required to have an examination because of your job, such as a painter, or because of some task you must do, such as wear a respirator. You must be under medical surveillance if:

- a. You could be exposed to a hazardous material for 30 days out of the year at or above the action level set by the Occupational Health and Safety Administration (OSHA) or American Conference of Governmental Industrial Hygienists (ACGIH). This is usually half of the permissible exposure limit (OSHA) or the threshold limit value (ACGIH).
- b. You are required to by a standard that covers the chemical you will be working with.
- c. The Health Unit decides you must have an examination based on knowledge of the workplace, job requirements, and review of occupational history. This happens if there is little or no data available.

## 12. What kinds of physical examinations are there?

WFF's medical surveillance program includes the following medical exams:

- a. A **baseline examination** done before you start work in a job that could expose you to hazardous materials in order to:
  - Determine if you are suitable for the job.
  - Provide a baseline so medical personnel can later see any changes to your condition.
- b. A **periodic examination** done while you are working in a job that could expose you to hazardous materials.
- c. A **termination examination** done when you quit your job or are permanently removed from a job that could expose you to hazardous materials. It is important to document your state of health when you leave in case you later develop medical problems that could be a result of some exposure to hazardous materials.
- d. A **certification examination** done if your job might make existing health problems worse, or if the safety of others depends on your health. These exams are critical to controlling and eliminating occupational injury and illness and making sure certain employees can do their hazardous jobs safely. Check the personnel requirements for your work area to see if you need a certification examination.
- e. A **inadvertent exposure exam** is done when possible PEL or TLV may have been exceeded due to equipment malfunction or inadvertent exposure.

### 13. How often must I have a physical examination?

The Health Unit reviews the medical surveillance program and will determine the frequency of physical examinations for certain job descriptions based on current medical recommendations or changes to regulatory requirements.

### 14. How do I request a medical screening examination?

Your supervisor will request the medical screening exam based on the JHA and Work Center Safety Guide. To request a medical screening examination, you must:

- a. Supply the following to the Health Unit:
  - Your name, social security number, birth date job description, and phone number (your title and the building you normally work in would also be helpful)
  - Your supervisor's name, and supervisor's mail code
  - Concurrence from your supervisor
  - Justification for the examination; identify the toxic material you will work with and cite the requirement that says you must have the examination
  - What kind of physical examination you need from Paragraph 12 of this chapter
- b. Wait for the Health Unit call to schedule the examination.
- c. Report to the Health Unit for your examination. Fill out work history and exam questionnaires for the kind of physical examination you need. It is important that you fill out all forms completely to allow the doctor to properly perform the examination. You may pick up the forms in advance and complete them before your examination if reading or writing in English is difficult for you.

## *Responsibilities*

### 15. Who else has responsibilities for medical treatment and first aid?

- a. If you are a **supervisor**, you must:
  - Make sure your employees know where and how to get medical treatment.
  - Make sure your employees report all injuries or illnesses on the job to you.
  - Make sure injured or ill employees go to the Health Unit.
  - Make sure your employees know what to do when they see

their own doctor or go to a hospital for a work-related injury or illness.

- Buy and maintain first aid kits if your employees work off-site where there are no medical services immediately available.
- Make sure those employees who use first aid kits have first aid and bloodborne pathogens training.
- Make sure your employees have the required baseline medical examination before assigning them to a work area or job task such as working in a high noise environment, etc.
- Make sure all your employees are current on all required medical examinations.
- Keep a current roster of employees requiring enrollment in medical surveillance and medical screening programs.
- Report suspected drug and alcohol abuse to senior management for disciplinary action.

b. The **WFF's Health Unit** must:

- Decide if an injured employee with casts, braces, or crutches may return to work and how long he or she must be on light duty based on medical recommendations and information. Get approval from his or her attending doctor. Document the facts and outcome in the employee's medical files.
- Tell the Safety Office if an injury or illness will prevent an employee from doing his or her job.
- Ensure all injuries are accurately recorded in the IRIS system, and ensure all reports are updated if patient status changes.
- Keep medical files on each employee who is treated or examined at the WFF Health Unit.
- Protect employee medical files under the Privacy Act of 1974 and consider them privileged information.
- Provide physical examinations as required for on-site civil servant and contractor personnel.
- Make recommendations on the need for medical surveillance for new jobs.
- Provide emergency medical services to backup the WFF Emergency Services Department
- Assess and treat anyone with a job-related illness or injury. Assess and treat any medical emergency that

happens on site whether it is job-related or not.

# Chapter 6

## Reporting and Correcting Hazards

### 1. Who must follow this chapter?

You must follow this chapter if:

- a. You work at WFF or a WFF off-site location as a civil servant or contractor.
- b. You are a supervisor, facility manager, contractor safety representative, or director. Paragraph 13 of this chapter lists your responsibilities.

Paragraph 13 of this chapter also lists the responsibilities of the Safety Office, contracting officers, and contracting officers' technical representatives.

### *Reporting hazards*

### 2. What is a hazard?

A hazard is an unsafe or unhealthy condition causing danger that could lead to a mishap if conditions are left uncorrected. For example, a frayed electrical cord, an electrical cord across a walkway, or a possible toxic gas leak are hazards.

### 3. How do I report a hazard?

If you see a hazard or what you think is a hazard, take the following actions:

- a. Correct the hazard yourself if you can and tell your supervisor what you did.
- b. Report the hazard to your supervisor or higher management if you can't correct it yourself.
- c. Report the hazard to your facility operations manager if you get no satisfaction from your management.
- d. Report the hazard to the Safety Office (Extension 1625) if you get no satisfaction from your facility operations manager. Subparagraphs e through g below are other methods to report hazards to the Safety Office. The person that takes your call must record your information and track your report until it is resolved. You must report the following

information:

- When you report the hazard (date and time)
  - Where you found the hazard
  - What the hazard is
  - If you want your name kept confidential
- e. Use the Close Call Reporting web page located at <http://safety1st.gsfc.nasa.gov/closecall.shtml>.
  - f. Fill out a Close Call Report, on the above web URL, and fax it to the number on the form. A hazard is a potential close call. Your name will be kept confidential unless you check the box on the form. See your site's procedures if you work at a WFF field site.
  - g. Call, email, or send a note to the WFF Safety Office. Your name will be kept confidential unless you give permission for your name to be released.
  - h. Call the WFF Senior Official if you get no satisfaction from the Safety Office. Your name will be kept confidential unless you give permission for your name to be released.
  - i. Report it directly to NASA Headquarters through Director, Safety and Risk Management Division, or Director, NASA Occupational Health Office, if you get no satisfaction from WFF. Use this method only if you don't care if your name is kept confidential. Subparagraph i below is another method to report hazards to NASA Headquarters.
  - j. Send in a NASA Safety Reporting System (NSRS) form. Fill out an NSRS form, usually found near bulletin boards in several buildings at WFF, and mail it in as shown on the form. Your name will be kept confidential.
  - k. Call the Occupational Safety and Health Administration (OSHA) Office (1-800-321-OSHA or 1-800-321-6742) if you get no satisfaction from NASA Headquarters. This number is available 7 days a week, 24 hours a day. Your name will be kept confidential.

#### **4. How soon will I get a response to a hazard report?**

This table tells you when you can expect a response to a hazard you report to WFF organizations. WFF will start an investigation on any report involving imminent danger within 24 hours or during the next working day. An investigation of less serious hazards will start within 3 working days. NASA Headquarters and OSHA will investigate your report as soon as possible. You must be told in writing within 15 days if it is determined that there are no reasonable grounds to believe a

hazard exists.

<b><i>If you report it to . . .</i></b>	<b><i>Then . . .</i></b>
Your supervisor or facility manager	Your supervisor or facility manager must tell you what corrective action he or she has taken within 15 calendar days or tell you when he or she will have an answer.
The WFF Safety Office	A WFF Safety Office representative must tell you what corrective action will be taken or tell you when he or she will have an answer within 15 calendar days.
The WFF Senior Official	A WFF Senior Official's representative must tell you what corrective action will be taken or tell you when he or she will have an answer within 30 calendar days.

## *Determining risk*

### **5. How do I determine the risk a hazard poses?**

Risk considers both the severity of a mishap that could result from a hazard and the chance the mishap could occur. This tells you how serious the hazard really is and helps you decide which hazards to correct first. You must document both the risk assessment before controls are in place and the risk assessment after controls are in place. Use a risk assessment code (RAC) matrix to assess the risk of each hazard:

- a. Find the severity or the worst-case outcome of a mishap from the hazard along the left side of the matrix.
- b. Find the frequency or probability that you expect the mishap to occur across the top of the matrix.
- c. Find the RAC in the box where the "severity" and "frequency" cross.

d.

**PROBABILITY  
ESTIMATE  
(FREQUENCY)**

S E V E R I T Y	<b>SEVERITY ESTIMATE</b>	<b>A Frequent</b>  Likely to occur one or more times a year	<b>B Probable</b>  Likely to occur once in 1 - 2 years	<b>C Occas ional</b>  May occur once in 2 - 5 years	<b>D Remote</b>  Unlikely to occur, but possible within 5 years to end of system life	<b>E Improbable to occur</b>
	<b>I Catastrophic</b>  Death, several serious injuries or illnesses, or Damage over \$1,000,000	1	1	2	3	4
	<b>II Critical</b>  Serious injury or illness, several lost workdays, or Damage between \$250,000- \$1,000,000	1	2	3	4	5
	<b>III Marginal</b>  Lost workday, several minor injuries, or Damage between \$25,000- \$250,000	2	3	4	5	6
	<b>IV Negligible</b>  Minor injury or Damage less than \$25,000	3	4	5	6	7



## 6. What does each RAC mean?

The table below tells you what action you must take for each RAC.

<i>If the RAC is . . .</i>	<i>Then the risk is . . .</i>
1	Unacceptable - Correct within 24 hours using temporary or permanent engineering or administrative controls to reduce the hazard to a RAC 3 or 4. All operations must cease immediately until the hazard is corrected or until temporary controls are in place and permanent controls are in work. A safety professional should stay at the scene at least until temporary controls are in place.
2	Undesirable - Correct within 3 working days using engineering or administrative controls to reduce the hazard to a RAC 3 or 4 or less. All operations must cease immediately until the hazard is corrected or until temporary controls are in place and permanent controls are in work. The Program Manager, Campaign Manager, or Center Director may accept the risk with adequate justification.
3	Acceptable with controls - Correct hazard within 30 days and verify that documented procedures and controls are in place. Organizational Director (codes 200, 500, 800, etc.) or equivalent management may accept the risk with adequate justification.
4,5,6, or 7	Acceptable with controls - Correct hazard within 90 days. Branch Heads/Office Chiefs or equivalent management may accept the risk with adequate justification.

## 7. How do I determine the risk of a chemical exposure?

You find a "priority code" using a similar process that you use to find a RAC. You must first determine the exposure rating and health effects rating. To find the priority code:

- a. Determine the exposure rating from post-exposure data, mathematical modeling potential exposures, and professional judgment. Use this table:

<b>Category . . .</b>	<b>Description . . .</b>
0 -- no exposure	No contact with the chemical
1 -- low exposure	Infrequent contact with the agent at low concentrations
2 -- moderate exposure	Frequent contact with chemical at low concentrations or infrequent contact with chemicals at high concentrations
3 -- high exposure	Frequent contact with the chemical at high concentrations
4 -- very high exposure	Frequent contact with chemical at very high concentrations

- c. Determine the health effects rating from Material Safety Data Sheets, OSHA permissible exposure limits, National Institute for Occupational Safety and Health Registry of Toxic Effects of Chemical Substance, American Congress of Governmental Industrial Hygienists threshold limit values, and other sources of health effects information. Use this table.

<b>Category . . .</b>	<b>Description</b>
0	Reversible effect of little concern or no known or suspected adverse health effect
1	Reversible health effects of concern
2	Severe, reversible health effects of concern
3	Irreversible health effects of concern
4	Life-threatening or disabling illness or injury

- c. Add the exposure rating and health effects rating and use that number and this table to find the priority code.

<i>Value . . .</i>	<i>Priority code . . .</i>
0-1	Very low
2	Low
3	Moderate
4-6	High
7-8	Very high

## *Correcting hazards*

### **8. How do I correct a hazard?**

Follow the institutional hazard abatement process to correct a hazard (29 CFR 1960, Occupational Safety and Health Act of 1970, and, Executive Order 12196).

### **9. What kind of corrective action do I take?**

Use these steps to decide what corrective action to take for any hazard found by hazard reports, inspections, or mishap investigations. Take the following actions in this order to correct a hazard. Go to the next step only if the present step or previous steps aren't feasible or are too costly:

- a. Change the design so you eliminate or reduce the hazard.  
For example, use a less hazardous material or lower voltage if you can.
- b. Install safety devices or guards. For example, use safety interlocks, machine guards, or relief valves if you can.
- c. Install caution and warning devices. For example, use oxygen monitors or alarms if you can.
- d. Use administrative controls, such as special work procedures, training, administrative barriers, and signs.  
When you use administrative controls:
  - Everyone in the work area must understand and follow them.
  - They must affect the hazards they are to control.
  - They must be enforced.
  - They must be updated as needed.

e. Use personal protective equipment.

You must never accept the risk of violating WFF, NASA, state, or federal requirements. If you think you can't follow any such requirement, you must request a variance as described in Chapter 14, "Standards for safety and health," of this handbook.

## **10. What if I need more time or money to correct a hazard?**

If you, as a line manager or facility operations manager can't correct a hazard quickly, or within your own budget, you must develop a plan to correct the hazard or ask for more money. If you:

a. Will correct the hazard within 30 calendar days, you must:

- Inform everyone that enters the area where the hazard exist the nature of the hazard and the steps they must take to protect themselves and others.
- Have the WFF Safety Office post NASA Form 1390, "Notice of Unsafe or Unhealthful Condition," or equivalent notice. Your plan should say what you will do to correct the hazard and when you will correct it.
- Report your progress on correcting the hazard to the WFF Safety Office.

b. Will correct the hazard in more than 30 calendar days, you must:

- Develop a plan that says why you can't correct the hazard in 30 days and how you will protect your employees from the hazard until it is corrected. Document the plan on NASA Form 1584, "Safety and Health Hazard Abatement Plan," or equivalent notice. Have the WFF Safety Office concur on the plan. The WFF Safety Office will keep a copy of the plan.
- Have the WFF Safety Office post NASA Form 1584 or equivalent notice in your work area. Tell your employees about the hazard and where the NASA Form 1584 is posted.
- Develop a new plan if you change your approach to correcting the hazard.
- Amend the plan if you change the schedule for having the hazard corrected.

c. Need more money to correct the hazard, you must:

- Develop ways to protect your employees from the hazard. Consult with the Safety Office and safety committees in your organization.
- Tell your employees what they must do to protect themselves.
- Inform the person(s) that reported the hazard of your progress in correcting the hazard.
- Ask for more money from your higher management, all the way to the Center Director if necessary.
- Use NASA Form 1584 if you must ask NASA Headquarters for more money. Send a copy to the Director, Safety and Risk Management Division, for safety issues or the Director, Aerospace Medicine and Occupational Health Division, for health issues.

### **11. How are open hazards and hazard controls tracked?**

The WFF Safety Office tracks open safety hazards on its hazard abatement tracking system. You will periodically receive lists of open hazards.

You must tell the WFF Safety Office when you have corrected the hazard so it can be logged and closed. Safety Office personnel will follow up to make sure the hazard is corrected.

### **12. What if I work in a leased space off site?**

If you can't correct a hazard in a leased space yourself, notify the General Services Administration or the federal agency that leases the space of the hazard and ask for help to correct it in writing.

## *Responsibilities*

### **13. Who else has responsibilities for reporting and correcting hazards?**

a. As a **supervisor**, you must:

- Take necessary actions to correct hazards as described in Paragraphs 5, 6, 7, and 8 of this chapter. This includes temporary measures to protect your employees while you wait on building or equipment changes. Improve on your corrective action periodically.
- Always remind your employees that reporting hazards is necessary. Reward those who promptly report hazards and reprimand those who don't.

- b. As a **contractor safety representative**, you must help contractor or NASA management with reporting and correcting hazards as necessary
- c. As a **facility operations manager**, your knowledge of your facility is important for correcting hazards. You must make sure:
  - Hazards found in your facility are reported and corrected
  - Employees in your facility know about corrective action plans
- d. As an organizational **director** at WFF, you must:
  - Develop processes for reporting and correcting hazards in your directorate.
  - Review open hazard reports for your directorate and make sure they are closed in a timely manner.
  - Provide services from your directorate that other WFF organizations need to correct hazards such as testing, evaluating data, modifying buildings or equipment, or sampling work areas.
- e. The **Safety Office** must:
  - Review and approve hazard reports and corrective action plans
  - Help WFF contracting officers and technical representatives develop requirements for reporting and correcting hazards for their solicitations and contracts
- f. **Contracting officers and technical representatives** must make sure that WFF contractors understand and follow NASA and WFF contract requirements for reporting and correcting hazards.

# Chapter 7

## Reporting and Investigating Close Calls and Mishaps

### 1. Who must follow this chapter?

You must follow this chapter if you:

- a. Work at WFF or a WFF field site as a civil servant or contractor.
- b. Are a member of a mishap investigation board. The requirements for mishap investigation boards start at Paragraph 19 of this chapter.
- c. Are a supervisor, facility manager, contractor safety representative, director, or temporary official in charge of a mishap scene. Paragraph 27 of this chapter lists your responsibilities.

### 2. What does this chapter exclude?

This chapter tells you how to report and investigate close calls and mishaps. This chapter excludes the following:

- a. Emergency response to a mishap. You can find those requirements in Chapter 4, "Emergency action and planning," of this handbook and the Consolidated Comprehensive Emergency Management Plan.
- b. Discussion of liability, disciplinary action, or program direction.

### 3. What is a mishap?

A mishap is an event that causes unplanned or unexpected death, injury, or loss or damage of property. For example, death or injury to a test subject is a mishap. Failure of a test object isn't a mishap if you expected it to occur as a potential result of the test. WFF has the following categories of mishaps:

- a. **Type A** - mishaps that result in death or equipment or property damage equal to or greater than \$1 million.
- b. **Type B** - mishaps that result in any of the following:
  - Permanent disability
  - Hospitalization of three or more persons for more than observation

- Property damage equal to or greater than \$250,000 and less than \$1 million
- c. **Type C** - mishaps that result in lost time injuries or illnesses less than type B or equipment or property damage equal to or greater than \$25,000 and less than \$250,000.
- d. **Incidents** - mishaps that result in medical treatment (more serious than first aid cases) injuries without lost time or equipment or property damage greater than or equal to \$1,000 and less than \$25,000.
- e. **First Aid Cases** - mishaps that result in injuries needing only first aid treatment.

## *Reporting close calls and mishaps*

### 4. How do I report a close call?

A close call is an event that could have caused injury or property damage, but didn't. For example, someone falls from a ladder and is not injured or someone almost gets cut operating a piece of equipment because a machine guard is missing. Close calls are required to be reported, see your site's close call reporting procedures if you work at a WFF field site. Report a close call within 8 hours after it happens by following these steps:

- a. Use the close call reporting process at <http://safety1st.gsfc.nasa.gov/closecall.shtml>
- b. Or use a close call report form, available at the Safety Office (each contractor has their own reporting process). The close call form does not replace the mishap report, NASA Form 1627, which you may also use to report a close call. If you report a close call on a NASA Form 1627, follow the steps in Paragraph 8 of this chapter. Fax the report to the number on the form or call the Safety Office (ext. 1625).
- c. The Safety Office will log the report and forward it to a facility manager or line manager for investigation.
- d. The Safety Office will send you a copy of the proposed corrective action for your review.
- e. After resolving any issues, the Safety Office closes the close call report. If the hazard isn't corrected immediately, the Safety Office will track it in the Hazard Abatement Tracking System.

### 5. What do I do if a mishap occurs?

If a mishap occurs in your area, you must follow these steps:

- a. Call your emergency number if the mishap is an emergency.



Emergencies include:

- Mishaps that cause major injuries to one or more persons or major property damage
- Mishaps that result in a condition that is immediately dangerous to life or health
- Any unplanned or uncontrolled hazardous material spills
- Any unplanned fire or explosion
- Mishaps that require prompt emergency response

Remember, your emergency number at WFF is 911.
------------------------------------------------

- b. Prevent further injury or damage.
- c. Secure the mishap scene.
- d. Safeguard mishap evidence.
- e. Report the mishap as described in Paragraph 6 of this chapter.
- f. If you think the mishap could be a type A or B, contact the Safety Office or the Code 800 Director's Office immediately.

The Office of Public Affairs is the only organization allowed to coordinate releases of information to the news media.
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## **6. How do I report a mishap?**

You must report all mishaps. To report a mishap:

- a. You may report the mishap immediately to the Safety Office by telephone.
- b. You must also report the mishap to your Supervisor as soon as possible.
- c. You must complete and sign an initial written report within 1 working day on NASA Form 1627 and send it to the Safety Office.
- d. You should report the mishap to your higher management.
- e. Report mishaps that occur in foreign locations as described in Paragraphs 10, 11, and 12 of this chapter.

## 7. Who reports mishaps?

This table tells you who should report certain kinds of mishaps.

<i>If the mishap causes . . .</i>	<i>Then the . . .</i>
An injury or illness	Employee's supervisor should report the mishap
Facility or property damage	Manager whose organization has custody of the facility or property should report the mishap
A hazardous material release	Manager whose organization has custody of the hazardous material should report the mishap

## 8. What do I do with a NASA Form 1627?

If you, as a supervisor, have a mishap in your area you must:  
a. Do the following:

- Complete and sign an initial written report on NASA Form 1627, blocks 1-22, 27, 28, 32, and 33, within 1 working day after you find out about the mishap.
  - Send the NASA Form 1627 to the Safety Office.
- b. Complete the Form 1627 after you investigate the mishap, document your corrective action in block 34, and sign block 35. You must complete this within 10 working days or ask for an extension from the Safety Office.
- c. Have your facility operations manager concur on the corrective action if the mishap involved the building or hazardous materials.
- d. Have your supervisor, program manager, or contract project manager sign the form in block 35.
- e. Send the completed form to the Safety Office. If that office agrees with the corrective action, it will close the report and let the supervisor know that the report is closed.
- f. Provide follow-up data such as total time lost from work, end of restricted duty, or final costs to the Safety Office as needed.

## 9. What mishaps are excluded from recording requirements?

NASA allows most of the same exclusions as OSHA from recording work-related injuries and illnesses. You are required to report all mishaps, but the following injuries and hardware-related mishaps are not recorded against your records:

- a. Injuries from non-occupational diseases where the disease itself, not the injury, is proximate cause of the lost time. Example: A hemophiliac suffers a minor laceration that results in time away from work.
- b. Injuries that occur in WFF parking lots.
- c. Injuries or illnesses sustained before working for WFF unless specifically aggravated by current tenure of service.
- d. Injuries from non-work-related, preexisting musculoskeletal disorders or by minimum stress and strain (example: simple, natural, nonviolent body positions or actions). These injuries or illnesses are unrelated to accident-producing agents or environments in daily work.
- e. Injuries experienced during unsupervised or un-sponsored recreational activities (such as a volleyball game at lunch period).
- f. Injuries during official travel from personal, non-NASA-sponsored recreational activities (such as skiing or tennis accidents).
- g. Malfunction or failure of component parts that are subject to normal wear and tear and have a fixed useful life less than the complete system or unit of equipment if:
  - The malfunction or failure is the only damage, and
  - The only action is to replace or repair that component part.

This exception doesn't apply to a malfunction or failure of a component part that results in damage to another component.
- i. Anticipated damage to equipment or property incurred during authorized testing.
- j. The normal project-level technical investigation process will investigate mission failures occurring in the Balloon and Sounding Rocket programs. However, if the mission failure results in death, injury/illness, or unanticipated damage to government or non-government property, reporting and investigating procedures detailed in this manual and NPG 8621.1. will be followed. Program officials will prepare an annual fiscal year report and submit to program and SMA officials from GSFC and the NASA Safety and Risk Management Division for their review. Program officials will report all mission failures and close calls to the WFF Chief of Safety.

In addition, these occurrences will be recorded on NF-1627 and entered into the IRIS and LLIS.

- k. Property damage from vandalism, riots, civil disorders, or felonious acts such as arson or sabotage.

## *Mishaps and close calls at international locations*

### **10. What mishaps at international locations must I report?**

You must report:

- a. Any injury or occupational illness to WFF civil service or contractor personnel.
- b. Any damage to WFF equipment.
- c. Close calls where WFF personnel could have been injured or WFF equipment could have been damaged.

### **11. How do I report a mishap at an international location?**

If a mishap occurs, you must follow the reporting process in this chapter as closely as your situation will allow. Call the WFF Safety Office, telephone number (757) 824-1625, during normal WFF duty hours.

### **12. What do I do if I am injured at work while on foreign travel?**

You must report to the WFF Clinic on your first business day after returning to work at WFF. This will allow the clinic personnel to make sure you have or will recover and to update your medical records.

## *Investigating close calls and mishaps*

### **13. How do I investigate a close call or mishap as an individual or member of a small team?**

Supervisors or facility managers usually investigate Type C mishaps, incidents, first aid cases, and close calls. You must investigate incidents and more serious mishaps, close calls, and first aid cases with a reasonable potential of being a Type C or more serious mishap. As a supervisor or facility manager, you may delegate the investigation.

When you investigate a mishap or close call, you must find the root cause of the mishap and decide what corrective actions

you will take to prevent the mishap from happening again. To investigate a close call or mishap:

- a. Start your investigation as soon as all emergencies are brought under control. You may ask the Safety Office for help. A Safety Office representative may already be on the way to the scene. You must first:
  - Your first priority is the care and treatment of injured persons as a result of the mishap.
  - Secure the mishap scene and protect it from being disturbed.
  - Identify potential witnesses and get statements from them.
  - Safeguard evidence such as samples and photographs.
  - Secure all records such as checklists, videos, and electronic data.

WFF's Senior Official may appoint a mishap investigation board to investigate your mishap. If a mishap board is appointed, you must stop your investigation, keep the mishap scene and evidence secure, and cooperate with the board.

If you think a mishap investigation board should investigate your mishap, contact the Safety Office.

- b. Refer any news media personnel who ask you about the mishap to the Public Affairs Office.

The Public Affairs Office is the only organization authorized to release mishap information to the news media.

- c. Consult any experts you need to sample the mishap scene or analyze the data.
- d. Interview witnesses. You must keep witness statements confidential.
- e. Examine all evidence and analyze all mishap data to determine the primary cause and contributing causes of the mishap. Go into as much depth as you need to find the root cause of the mishap. Don't stop until you find the root cause. For example:
  - The primary cause may be that the employee didn't follow procedures.
  - The root cause could be that there were no procedures or that management didn't train the employee on the procedures.

- f. Use the current version of NPG 8621.1, NASA Procedures and Guidelines for Mishap Reporting, Investigating, and Record keeping.
- g. Decide what action you will take to correct the root causes and prevent recurrence. Use the steps in Paragraphs 7 and 8 of Chapter 6, "Reporting and correcting hazards," of this handbook. Make sure your corrective action will eliminate the root causes or reduce their effects. Document lessons learned as described in Paragraph 22 of this chapter.
- h. Document your corrective action on the NASA Form 1627, on the close call response form, or on a separate report that you attach to the NASA Form 1627. Remember to turn in work requests if necessary.

Don't use your investigation to find fault, determine disciplinary action, or defend WFF from lawsuits. Your purpose is only to prevent the mishap from happening again.

#### **14. How will mishaps in foreign countries be investigated?**

Your organization and the Safety Office will make sure the mishap is investigated under NASA requirements and international agreements.

#### **15. How do I correct hazards found during an investigation?**

If a mishap occurs in your work area, you must correct the cause of the mishap and close out the NASA Form 1627. Follow these rules:

- a. If you assign corrective actions to other organizations, you should contact those organizations ahead of time. If they don't refuse the action within 5 working days, they have accepted the action. It is their responsibility to complete the actions.
- b. If you or another organization wants to change any estimated completion dates for any corrective actions, you must get approval from your director.
- c. The Safety Office will track all corrective actions in the hazard abatement tracking system until they are completed and verified.

#### **16. What do I do with close call or mishap information?**

As a manager, you should review close call and mishap investigation reports and lessons learned packages to:

- a. Find close call or mishap trends in your work areas such as:

- Is the number of close calls or mishaps in my work areas increasing or decreasing?
  - Do any of my work areas have several mishaps of a certain kind such as back injuries or trips and falls?
  - Find what the root causes of the close calls and/or mishaps in my area? What have I done to correct the root causes? (engineer controls, administrative controls and PPE.)
- b. Take action on mishap reports or lessons learned that would improve your work areas.

### **17. What about mishaps that involve only contractor personnel or equipment?**

Contractors will investigate mishaps that involve only contractor personnel or equipment as described in their contracts and in NPG 8715.3.

## *Mishap investigation boards*

### **18. When must WFF form a mishap investigation board?**

NASA Headquarters appoints mishap investigation boards for Type A mishaps. GSFC's Center Director must appoint mishap investigation boards for Type B mishaps, and mission failures. The WFF Senior Official may appoint a board for less serious mishaps or close calls if the mishap could have been a type A or B.

Board Members must be appointed as soon as possible, but no later than 72 hours after he or she is notified of the mishap. WFF's Senior Official or his or her representative must discuss board member appointments and the course of action to follow.

### **19. Who must be on a mishap investigation board?**

Mishap investigation board members must meet the following requirements:

- a. Members must meet the requirements of paragraph 3.5 of NPG 8621.1.
- b. The chairperson and other members must be third parties not directly connected with the work area where the mishap

occurred.

- c. A mishap investigation board that investigates a mishap involving chemical processes must include personnel who are familiar with the process under investigation. In this case, one or more persons from the work area where the mishap occurred may be board members.
- d. The board chairperson and members must be federal employees unless federal regulations say otherwise. The board chairperson may exclude non-federal employees from any deliberations unless they are appointed board members as in Subparagraph e below. If the board chairperson thinks any member will affect the integrity of the board, he or she must bring that concern immediately to the attention of the appointing official.
- e. The following non-federal employees may be included:
  - Those listed on the appointing orders as observers, advisors, or consultants
  - A contractor's doctor
  - Contractors with special knowledge of the chemical process that is being investigated as described in Subparagraph c above

## **20. How does a mishap investigation board investigate a mishap?**

As a chairperson or member of a mishap investigation board you must:

- a. Follow the requirements in NPG 8621.1. and NPD 8621.
- b. Refer any news media personnel who ask you about the mishap to the Public Affairs Office.

The Public Affairs Office is the only organization allowed to release of mishap information to the news media.

- c. Give mishap evidence other than witness statements to other investigations to find fault, determine disciplinary action, or defend WFF from lawsuits, if applicable.
- f. Review and approve corrective actions taken by the organization that had the mishap to make sure they are adequate. Make sure lessons learned are documented as described in Paragraph 22 of this chapter.

Don't use your investigation to find fault, determine disciplinary action, or defend WFF from lawsuits. Your purpose is only to prevent the mishap from happening again.



## 21. What must a mishap investigation board include in an investigation report?

A mishap investigation board report must follow the format, timetable, and approval loop in NPG 8621.1.

## *Other requirements and responsibilities*

## 22. How does WFF share lessons learned from mishaps or close calls with others?

When you finish your investigation, you should decide if you have any lessons learned to share with other organizations that would prevent them from having a similar mishap.

- a. If you have any lessons learned, you must attach them to your final mishap or close call report when you send the report to the Safety Office. Enter the lessons learned into the NASA Lessons Learned system on the Internet at <http://llis.gsfc.nasa.gov/>.
- b. The Safety Office will share lessons learned with:
  - WFF employees and organizations that would benefit through means such as alerts, announcements, or special reports.
  - Organizations outside WFF that would benefit through the Government Industry Data Exchange Program, product safety bulletins, or other means.

## 23. What mishap information must WFF report?

The Safety Office must prepare and submit the following reports and data:

- a. **Mishap data to Headquarters.** The Safety Office:
  - Enters mishap information from each NASA Form 1627 into the mishap reporting and corrective action system.
  - Sends this information to NASA Headquarters.
- b. **Mishap trend reports.** The Safety Office must send mishap trend reports to the WFF Senior Management Director yearly. These reports are used to assess WFF, directorate, and contractor safety and health performance.

## 24. Who must WFF notify if a mishap occurs?

If a mishap occurs, the Safety Office must:

- a. Notify NASA Headquarters of any Type A or Type B mishaps and the nearest OSHA office of any mishap that causes a death or hospitalization of three or more persons within 8 hours.
- b. Decide, through the WFF Senior Official, if any other organization such as the Environmental Protection Agency, the Federal Emergency Management Agency, NASA Headquarters, or local authorities should be notified under WFF's emergency preparedness plans.

## 25. What other requirements must I follow for reporting and investigating close calls and mishaps?

In addition to the requirements in this chapter, you must follow the current version of these requirements as necessary:

- a. NPD 8621.1
- b. NPG 8621.1

## 26. What individuals have responsibilities for reporting and investigating close calls and mishaps?

- a. As a *supervisor*, you must:
  - Make sure close calls and mishaps in your area are reported as described in Paragraphs 4, 5, 6, and 7 of this chapter. Fill out mishap reports as described in Paragraph 8 of this chapter.
  - Investigate all type C mishaps, incidents, first aid injuries, and close calls as described in Paragraph 13 of this chapter.
  - Take necessary actions to correct hazards discovered during your investigation as described in Paragraph 15 of this chapter. This includes temporary measures to protect your employees while you wait on building or equipment changes. Review your temporary measures periodically.
  - Support mishap investigation boards as necessary.
  - Always remind your employees that reporting close calls and mishaps is necessary. Reward those who promptly report close calls and mishaps and reprimand those who don't.
  - Review mishap information as described in Paragraph 16 of this chapter. Tell your employees what you learn from

your analysis and what actions you plan to take.

- Monitor the recovery of any employee with a lost-time injury. Arrange for that employee to return to work on light or restricted duty as soon as possible.
- b. As a **contractor safety representative**, you must help contractor or NASA management with close call and mishap reporting and investigation as necessary.
- c. As a **facility operations manager**, your knowledge of your facility is important to a mishap investigation. You must:
  - Respond to close calls and mishaps that occur in your facility.
  - Make sure close calls and mishaps that occur in your facility are reported and investigated.
  - Investigate close calls. Support mishap investigations as necessary.
  - Make sure that employees in your facility know about corrective action plans and lessons learned.
- d. As an **office chief** at WFF, you must:
  - Develop processes for reporting and investigating close calls and mishaps that occur in your directorate.
  - Approve final reports and corrective action plans on a NASA Form 1627 for mishaps that occur in your directorate.
  - Review mishap information as described in Paragraph 16 of this chapter. Review open close call or mishap reports in your directorate and make sure they are closed in a timely manner.
  - Provide services from your directorate that other WFF organizations need to correct hazards found during investigations such as testing, evaluating data, modifying buildings or equipment, or sampling work areas.
- e. **WFF's Senior Official** must:
  - Be the chief spokesperson for all WFF mishaps with local, state, and federal authorities and the news media through the Public Affairs Office.
  - Appoint mishap investigation boards as described in Paragraphs 17 and 18 of this chapter.
  - Appoint a temporary official in charge of a mishap scene for major mishaps if necessary. The temporary official in charge will usually be: the head of the Safety Office

for WFF mishaps; the aviation safety officer of the Aircraft Office for aircraft mishaps; or the campaign manager or senior civil servant for mishaps at WFF field sites, per the project plan.

- Make sure the temporary official in charge of a mishap scene gets necessary support until the mishap investigation board takes over.
- Make sure corrective action plans are completed. Monitor the progress of corrective plans.

f. The **Safety Office** must:

- Notify WFF senior management and other organizations of all immediately reportable mishaps as described in Paragraph 23 of this chapter.
- Recommend how mishaps should be categorized (such as type A or B), investigated, and reported to WFF's Senior Official.
- Track the correction of the mishap's condition to completion.
- Have on hand and maintain a Mishap Investigation kit

## 27. What organizations have responsibilities for reporting and investigating close calls and mishaps?

a. The **Safety Office** must:

- Provide the WFF Executive Safety Council and the Range and Mission Management Office, code 840, with a list of personnel trained in mishap investigations.
- Keep records of close call and mishap reports and investigations and track all items to completion.
- Help with close call and mishap investigations and corrective actions as necessary.
- Review and approve close call and mishap reports and corrective action plans. Evaluate reports for possible lessons learned.
- Verify that corrective actions are completed.
- Do trend analysis and other statistical analyses of close calls and mishaps.
- Review mishap data and suggest to the line managers ways they can improve their safety and health performance.

b. The **Health Unit** must:

- Generate documentation when an employee has an injury or illness on the job. Send copies to the Safety Office and the injured employee's supervisor or company.
- Inform the employee's supervisor and the Safety Office immediately of a fatality or of a suspected disabling injury or illness
- Provide any necessary occupational health and industrial hygiene support required by other WFF organizations to fulfill any of the responsibilities of this chapter.
- Provide medical or pathological information required to fulfill the requirements of this chapter under the Privacy Act of 1974.
- Maintain the employee medical file as a result of the mishap for the required amount of time.

c. The **Security Office** must:

- Make sure that mishap scenes are secured.
- Make sure that evidence and important information are preserved for the investigation.

d. The **GSFC Chief Counsel** must:

- Have ground rules to protect the privileged status of witness statements, witness testimony, or other matters related to a mishap.
- Make sure that all board appointments for WFF meet legal requirements.
- Review mishap information or reports before they are released from WFF control to make sure the facts are correct and can be released.

e. The **Public Affairs Office** must:

- Prepare releases of any mishap information to the news media or other organizations outside WFF.
- Have the WFF Safety Office and anyone else connected with the mishap, such as the mishap investigation board chairperson, review information to make sure that the facts are correct and can be released.
- Protect the privileged status of witness statements, witness testimony, and other matters related to a mishap under Chief Counsel ground rules.
- Follow procedures for public announcements by NASA found in agreements with other agencies or contractors when

releasing mishap information.

- Coordinate information releases as described in Appendices C & D of NPG 8621.1
- f. The **Photo Lab** must safeguard all photos of mishap investigations as confidential and privileged documents. Release photos only to the mishap investigation board.
- g. **Contracting officers and their technical representatives** must make sure that WFF contractors understand and follow NASA and WFF contract requirements for reporting and investigating close calls and mishaps.

# Chapter 8

## Safety and Health Inspections

### 1. Who must follow this chapter?

You must follow this chapter if you work at WFF or a WFF field site. Paragraph 13 of this chapter lists the responsibilities of line managers, contractor safety representatives, and the WFF Safety Office.

### 2. Why does WFF do safety and health inspections?

Safety and health inspections identify hazards in the workplace so they can be corrected.

### 3. What safety and health inspections does WFF do?

This table lists the kinds of safety and health inspections WFF does. Inspections must look for both safety and health hazards unless otherwise noted.

<i>What inspections?</i>	<i>Who does them?</i>	<i>How often?</i>
Work area self inspections to find hazards	Managers responsible for the work area Employees in the work area Employee safety and health committee members	Inspect a few work areas monthly and make sure you inspect all your work areas quarterly
Construction area self inspections to find hazards	Construction company managers and employees	Weekly Monthly by directorate safety and health committee members
Regular safety and health inspections to find hazards	WFF Safety Office	Yearly or more often if necessary
Director walkthroughs	Organizational Directors	Twice a year
Facility operations manager walkthroughs	Facility operations managers	Inspect a few areas monthly and cover the entire building quarterly

*Table continues on next page.*

<i><b>What inspections?</b></i>	<i><b>Who does them?</b></i>	<i><b>How often?</b></i>
Industrial hygiene studies to determine if health hazards exist	WFF Safety Office	As necessary in response to inspections or employee reports As requested by line managers
Unannounced inspections to find hazards	WFF Safety Office	As needed
Special inspections and surveys to look at suspected hazards	WFF Safety Office	As requested by safety and health committees, employee representatives, or employees After an employee complaint
Follow up inspections to make sure hazards are corrected	WFF Safety Office	As necessary to make sure hazards are corrected
Baseline surveys on hazards of new and newly acquired facilities, processes, materials, or equipment	Operational readiness inspections User readiness reviews Informal survey teams	Before the new or newly acquired facilities, processes, materials, and equipment are used

#### **4. What about inactive work areas or equipment?**

You needn't inspect inactive work areas or equipment. If you want to reactivate inactive work areas or equipment, you must hold a thorough operational readiness review to identify hazards and take necessary actions to correct all hazards.

#### **5. What do industrial hygiene studies involve?**

Industrial hygiene studies monitor employee exposures to health hazards such as noise, radiation, or hazardous fumes and determine if they are within allowable limits. Industrial hygienists do the studies under nationally recognized industrial hygiene procedures and protocols. The studies involve:

a. Sampling work areas with:

- Equipment the industrial hygienist uses.
- Personal monitoring devices such as noise dosimeters or air-sampling pumps that employees wear for certain



- periods of time.
- b. Testing or analyzing the samples.

## **6. How do I prepare for an inspection?**

As a line manager, whether you are doing a self-inspection or being inspected by someone else, you must:

- a. Gather and review all safety and health information such as safety and health procedures, injury and illness records, previous inspection reports, hazard reports, and corrective action reports. Give outside inspectors the results from your last self-inspection.
- b. Decide what you will inspect. You may restrict your own inspections to only areas where your employees work. Suggest what areas to inspect to outside inspectors.
- c. Stop operations that could be hazardous to those on the inspection.
- d. Provide special passes or badges for outside inspectors if necessary. Make arrangements with the Security Office ahead of time if needed.
- e. Provide necessary personal protective equipment (PPE) to your employees who go on the inspection. Tell outside inspectors what PPE they need to bring such as hard hats, safety shoes, or respirators before the inspection if possible. Provide outside inspectors with PPE that is unique to your work area such as gloves or suits. Everyone on the inspection must use PPE as required.
- f. Arrange for employee representatives to participate. Employee representatives aren't required, but are encouraged. Employees or employee groups should choose employee representatives.
- g. Are you trained for the job?

## **7. How do I do an inspection as an individual or small team?**

To do a self inspection:

- a. Find all the safety and health hazards you can by:
  - Using checklists you develop or checklists from the WFF Safety Office using standards from this handbook, NASA requirements, or Occupational Safety and Health Administration (OSHA) requirements
  - Questioning any condition you think may cause a mishap
- b. Question employees in the work areas about safety and health matters.

- c. Keep records of your inspections and track the hazards to closure. Records must include at least the following information:
  - What hazards you find
  - When and where (building and room) you found them
  - What actions you take to correct the hazards
  - When you correct each hazard
- d. Correct hazards on the spot if possible.
- e. Ask the WFF Safety Office for a special inspection or industrial hygiene survey for things you aren't sure of. Tell all employees the inspection results.
- f. Correct all hazards within a reasonable amount of time as described in Chapter 6, "Reporting and Correcting Hazards," of this handbook.

Certified industrial hygienists, certified safety professionals, professional engineers, and other safety and health professionals are available to help you with inspections and hazard correction as needed.

## **8. What can I expect during an inspection by the WFF Safety Office?**

Safety and health inspectors are authorized to enter any work area that isn't hazardous to themselves or your employees. You must cooperate with safety and health inspectors when they enter your work areas. They have the right to refuse to allow anyone to accompany them who would interfere with a fair and orderly inspection. Safety and health inspectors must follow any special procedures you have for entering your work areas.

## **9. What must I do after an inspection?**

After you, as a manager, finish the exit conference of an inspection, you must:

- a. Tell all employees the inspection results.
- b. Develop action plans to correct all hazards within a reasonable amount of time as described in Chapter 6 of this handbook.
- c. Post NASA Forms 1390 or 1584 after you get the written report. Keep each form posted for at least 3 days or until the hazard is corrected.
- d. Post NASA form 1390 or 1584 in an area available to all employees.

## **10. How does WFF handle inspections by OSHA or National Institute for Occupational Safety and Health (NIOSH)?**

When OSHA or NIOSH representatives come to inspect WFF work areas, WFF will:

- a. Allow them to enter any WFF workplaces, whether occupied by government or contractor employees, to inspect them or evaluate their conditions. The Security Office will handle access to secure areas.
- b. Require them to show identification, and receive any necessary security clearances.
- c. Give the inspectors:
  - Safety and health information on the worksites they will visit
  - Photographic support as needed and if available
- d. Arrange for them to interview employees during their visit.
- e. Escort them during their visits. The following persons must escort them:
  - Representatives of any contractors who work in the work area to be inspected
  - A representative from the WFF Safety Office for OSHA visits; a representative of the WFF Safety Office may also escort NIOSH visitors
  - A manager or employee representative from work area to be inspected
- f. Keep OSHA and NIOSH reports on civil service employee areas at the WFF Safety Office.
- g. Send the results of the inspection to NASA Headquarters, Code Q.
- h. Insure that inspectors have the required PPE for the area to be inspected.
- i. Provide an "office work space" with telephones and computer portals.
- j. Provide administrative support.

## **11. What if I am a contractor and OSHA or NIOSH inspects my areas?**

You must report the following to the WFF Safety Office within 10 working days after you get the OSHA or NIOSH report:

- a. A copy of the report
- b. A summary of any findings

- c. A summary of actions you will take to correct the findings

## 12. Where can I get more information on safety and health inspections?

You can find more information on safety and health inspections in these documents:

- a. 29 CFR 1910, "Occupational Safety and Health Standards, General Industry"
- b. CFR 1926, "Occupational Safety and Health Standards, Construction Industry"
- c. 29 CFR 1960, "Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters"
- d. *A Strategy for Occupational Exposure Assessment*, Editor Neil C. Hammond, American Industrial Hygiene Association, Akron, Ohio, 1991
- e. Federal Register 53.133, "Voluntary Protection Programs, Occupational Health and Safety Administration"

## 13. Who else has responsibilities for safety and health inspections?

- a. As a WFF **line manager**, you must:
  - Make sure that self-inspections are done in your work areas as described in Paragraphs 3, 6, and 7 of this chapter.
  - Take action on all inspections as described in Paragraph 9 of this chapter.
  - Keep records on your self-inspections.
  - Involve your employees in safety and health inspections.
- b. As a **contractor safety representative**, you must help contractor or NASA safety and health inspections as necessary.
- c. The **WFF Safety Office** must:
  - Have qualified safety and health inspectors.
  - Make sure safety and health inspectors have enough documented training and experience in finding, evaluating, and correcting hazards.
  - Note health issues during safety inspections and report them to the Safety Office.
  - Note safety issues during health inspections and report them to the WFF Safety Office.
  - Notify NASA Headquarters, Office of Safety and Mission

Assurance, of OSHA or NIOSH inspections or investigations of WFF or contractor operations.

# **Chapter 9**

## **Training, Awareness, and Motivation for Safety and Health**

### **1. Who must follow this chapter?**

You must follow this chapter if you work at WFF or a WFF field site. Paragraph 9 of this chapter lists the responsibilities of line managers, the Safety Office, and the Human Resources Office.

### **2. Why must I have safety and health training?**

You must have safety and health training so that you:

- a. Understand the hazards you may be exposed to and how to protect yourself and others.
- b. Know safe and healthful work habits and have the skills to put them into practice.
- c. Know and are able to carry out your safety and health responsibilities.
- d. Fulfill standards set forth by the law.

### **3. What general training or awareness must I have in safety and health?**

You must:

- a. Be aware of federal regulations and NASA requirements to include:
  - The Occupational Safety and Health Act and Executive Order 12196, "Occupational Safety and Health Programs for Federal Employees"
  - OSHA requirements in 29 CFR 1910, "Occupational Safety and Health Standards, General Industry," and 29 CFR 1960, "Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters," for civil service employees
  - NASA's and WFF's safety and health programsCopies of the above documents must be available to you.
- b. Be aware of available training opportunities.
- c. Know how to recognize hazards.

- d. Be aware of WFF's involvement with OSHA's Voluntary Protection Program.
- e. Have safety and health training for your job such as:
  - What safety and health requirements apply to your job
  - What hazards you face in your job
  - How to protect yourself and others from injury or illness on the job
  - What protective equipment you need, how to use it, and how to care for it
  - What you must do in an emergency
  - How to report hazards, close calls, and mishaps
  - How to fulfill safety and health responsibilities assigned by your supervisor
  - The "Right to Know" law concerning hazardous materials present in your work site

#### **4. Where can I get safety and health training?**

The WFF Safety Office can provide safety and health training through the NASA Safety Training Center (NSTC). NSTC provides more top-level training than job-specific training.

- a. If you are a civil service employee, you must take the training needed, if offered, by NSTC through the Safety Office. If the training you need for your job isn't offered, your supervisor must provide training by any of the following means:
  - Classes or briefings your organization or other WFF organizations develop
  - Training from sources outside WFF
- b. If you are a contractor, your company must provide training by any of the following means:
  - NSTC classes
  - Classes or briefings your company or other WFF organizations develop
  - Training from sources outside WFF
- c. If you develop your own safety or health training as a WFF organization, or contractor, you must: Have the WFF Safety Office review outlines for safety and health related training
- b. Contact the WFF Safety Office if you need help finding

safety training or health training.

## **5. How does WFF conduct safety and health training?**

WFF uses many methods for conducting safety and health training. These methods could range from formal classroom training to informal briefings in the work area. Safety and health trainers should know their subjects and provide high quality training. Safety and health training should:

- a. Apply to the student's jobs.
- b. Be interesting.
- c. Use different training aids and the latest technology.
- d. Involve the students.
- e. Include student feedback through course evaluations.
- f. Include necessary safety and health information.

## **6. How does WFF provide awareness and motivation for safety and health?**

WFF provides awareness and motivation for safety and health through:

- a. Awareness campaigns that use such things as:
  - Posters and videos.
  - The Safety and Health Newsletter.
  - Alerts and flyers.
  - Employee Safety Committee
  - Contractor Safety Committee, if available
- b. Rewards for good safety and health performance; awards programs will follow Paragraph 1.14 of NPG 8715.3 "NASA Safety Manual."
  - Safety should be part of your annual evaluation
- c. Contests
- d. Special events

## **7. What training records must I keep?**

The Office Chiefs or Contractors keep records on its classes. If you as a supervisor or WFF contractor, and you:

- a. Develop your own training, you must keep records of:



- Who took the training and when (date and time).
  - What the training covered. For this, you may attach outlines or lesson plans.
- b. Get training from outside WFF, you must keep:
- Proof that your employees took the training and when.
  - Handouts or course material.
  - Any other useful information such as who conducted the training.
- c. Provide the Safety Office Database Administrator with a copy of Safety and Health training records for inclusion in the Code 803 Safety and Health Training database.

## 8. What other requirements must I follow for safety and health training?

In addition to the requirements in this chapter, you must follow these standards as they apply to the work you do.

<i><b>For . . .</b></i>	<i><b>Follow . . .</b></i>
Safety and health training for individual jobs	Other chapters in this handbook 29 CFR 1910, "Occupational Safety and Health Standards, General Industry" 29 CFR 1926, "Occupational Safety and Health Standards, Construction Industry" NPG 8715.3, "NASA Safety Manual" NPG 8715.1, NASA Safety and Health Handbook - Occupational Safety and Health Programs"
Certification requirements	Chapter 10, "Hazardous operations: safe practices and certification," of this handbook NPG 8715.3, "NASA Safety Manual"

## 9. Who else has responsibilities for training, awareness, and motivation for safety and health?

- a. As a **line manager** at any level, you must:
- Identify training requirements and maintain training plans for your employees or managers.
  - Make sure your employees and managers complete their training plans.
  - Review your training requirements yearly to make sure they are still valid.
  - Analyze the hazards of each job your employees do to help you identify what safety and health training they need.
  - Keep your employees and managers up-to-date on any

required refresher training.

- Keep records on training you conduct or training from sources outside WFF as described in Paragraph 7 of this chapter.
- Promote training classes that would benefit your organization.

b. The **WFF Safety Office** must:

- Identify WFF's overall safety training needs and provide training such as classes, videos, or self-study programs to fulfill those needs.
- Make sure training follows federal regulations and NASA and WFF requirements.
- Promote training classes offered through NSTC and post these training opportunities on the WFF email system.
- Review the contents of training conducted by NASA and contractor organizations.
- Help NASA and contractor organizations to prepare, update, and evaluate their training programs.
- Evaluate training effectiveness with employees and managers. Act on these evaluations to improve training to meet VPP goals.
- Involve employees in training activities such as identifying training needs, developing classes and teaching classes.

c. The **Human Resources Office** will:

- Help fund safety and health training from outside sources.
- Make sure civil service employee training records are up to date.

# Chapter 10

## Hazardous Operations: Safe Practices and Certification

### 1. Who must follow this chapter?

You must follow this chapter if you do or oversee any hazardous operations at WFF or WFF field sites. Paragraph 16 lists the responsibilities of supervisors, line managers, safety representatives, certified confined space supervisors, contracting officers, and the WFF Safety Office.

### 2. What is a hazardous operation?

A hazardous operation is a job that involves hazardous materials, conditions, or equipment that could result in injury or property damage if you don't follow special precautions.

## *Requirements for hazardous operations*

### 3. What requirements must I follow for any hazardous operation?

If you do or oversee hazardous operations, you must:

- a. Decide which category, I, II, or III that your operation belongs in. See Paragraphs 4, 5, and 6 of this chapter.
- b. Inform your organizational director of the risks involved in any new or non-routine hazardous operation with the potential for death, serious injury, or loss of critical high dollar value hardware before you start.
- c. Make sure, as a supervisor, that everyone follows any requirements that apply to the operation or that are listed on the permit.
- d. Use the "buddy system" for all category I hazardous operations. This means at least one standby person in one of these ways:
  - One of you does the job and the other watches from the immediate area of the job to make sure the "worker" is safe.
  - Two of you do the job and you keep in constant contact with a standby person, electronically, mechanically, or visually. The standby person must be outside of the potential hazardous area so as not to be effected by the

hazard, yet within constant contact in the event of a mishap.

- Two of you do the job and you keep in contact with a standby person by coded lifeline signals and may be out of sight of the standby person. The responsible safety representative will decide how many worker and standby person combinations there must be.
- e. Take extra care, as a supervisor, to recognize and respond to dangerous situations when:
- Your employees work in hazardous areas they aren't normally assigned to.
  - Your employees are doing hazardous jobs for the first few times and have not had previous experience conducting the hazardous work.
  - Your employees are working near public access areas.

#### **4. What requirements must I follow for category I hazardous operations?**

Category I jobs involve operations that are likely to either cause death or serious injury to any employee or member of the public, or high-dollar property damage for WFF. Typical WFF category I operations include handling pyrotechnics and explosives, permit required confined space entry, and firefighting inside burning buildings.

For category I jobs, you must have at least the following:

- a. May require special PPE, PPE training and certification.
- b. Classroom or on-the-job training for initial certification and then as needed.
- c. Written examination or experience review by line management.
- d. Annual retraining that will include review of emergency response and first aid procedures.
- e. Re-certification as often as necessary.
- f. Physical examination if required by the Health Unit. See Chapter 5 of this handbook for more details on physical examinations.

#### **5. What requirements must I follow for category II hazardous operations?**

Category II jobs involve operations that, if not done correctly, could create a severe hazard to the operator or user, other personnel, or property. The requirements for

category II jobs are similar to those for category I jobs. You may reduce the levels of physical examination, training, and testing because of the lower hazard levels. Your organization must determine the certification and re-certification requirements with the concurrence of the WFF Safety Office. The "buddy system" may or may not be required depending on established controls.

- a. May require special PPE, PPE training and certification.

## **6. What requirements must I follow for category III hazardous operations?**

Category III jobs involve handling, transporting, and packaging of hazardous materials that do not disturb the integrity of the basic shipping container. Operations that involve the reduction of palletized or otherwise combined items of packaged hazardous materials qualify as handling.

Category III jobs require training and certification and a hazardous operations permit unless you have a procedure as described in Paragraph 11 of this chapter. Your organization will determine the certification period with concurrence from the WFF Safety Office. You must:

- a. Have specific training in federal, NASA, and WFF rules for preparing, packaging, marking, and transporting the material you will handle.
- b. Pass a written test to show you have the necessary knowledge and skills.

## **7. What requirements apply to hot work?**

To do any hot work, that is spark, arc, flame, or heat-producing work, you must first get a Hot Work Permit from the WFF Fire Department. You must follow these requirements for any hot work:

- a. Never do any hot work without an approved hot work permit.
- b. To reduce the chance of a fire, notify the FOM for that area, and remove ordinary combustibles.
- c. Monitor falling sparks may land and prevent them from falling into any sewer system or onto combustible material.

## **8. What work shift limits apply to hazardous testing or training?**

These limits prevent dangerous situations due to fatigue. They apply to those doing hazardous activities as well as to those who are responsible for activities that could result in

death, injury, or property damage. For Test Range Operations see 800 PG 8715.0.1 Code 800 Work Hour Policies:

- a. If you do any support or facility activities such as facility readiness, repairs, or maintenance, you should:
  - Never work a shift of over 12 hours in a 24-hour period.
  - Be off for at least 10 hours between shifts.
- b. If you are involved in test team activities that directly support tests, you should:
  - Never work a shift of over 12 hours for continuous testing. Normal and desired shifts should be 8 hours.
  - Have a qualified relief every 4 hours so you can take rest breaks.
  - Be off for at least 10 hours between shifts.

## *Permits and procedures*

### **9. How do I get a permit for hazardous operations?**

You must have a permit for certain hazardous operations before you may begin work. Fill out the permit form and post the completed permit at the job site until the job is over. Some operations, such as welding in a confined space, require two or more permits. Permits are only good for a limited time, such as one shift, and expire on the date and time shown on the permit. You must have one of the following permits as required and post it at the job site along with any procedures you will use:

- a. A ***confined space entry permit*** any time you enter a confined space.
- b. A ***hot work permit*** any time you do any spark, arc, flame, or heat-producing work outside a designated welding area. "Hot work" could be electric or acetylene burning, cutting, or welding. Call the Emergency Services Department (Fire Department) at extension 1300 to get a WFF Form WI-502, "Hot Work Permit". Soldering irons, hot plates, coffee pots, and similar appliances don't require a permit.

## *Certification for hazardous operations*

### **12. How do I become certified to do hazardous operations?**

To be certified, you must show that you have the necessary knowledge, skills, judgment, and physical ability to do the job safely. WFF will provide and document your training and certification. Certification must follow these requirements:

- a. You must be certified by your management after you:
  - Complete the necessary formal or on-the-job training. Your management must at least outline the on-the-job training you must have and state the minimum number of hours required
  - Pass an oral test, written test, or experience review
  - Get a certification card when the certification examiner determines that you have the required safety knowledge and skills. The certification examiner and certifying officer must both sign the card. See NPG 8715.3), Chapter 4, "Safety Training and Personnel Certification," for more information
- b. Your organization must keep a record of your certification.
- c. Certification is good for 3 years or less if necessary. The certifying officer and your management may request that you be re-certified or retested:
  - Any time they question your knowledge or skills.
  - When you have to do any new hazardous operation.
- b. You must have a physical examination when required by Paragraphs 4 or 5 of this chapter or by the Health Unit to be certified or re-certified.

### **13. How could I lose my certification?**

You will lose your certification if you:

- a. Leave WFF or your company.
- b. Fail the re-certification exam or fail to retain the required knowledge and skills.
- c. Are transferred or reassigned and no longer do the operations you are certified for.
- d. Fail to pass a required medical examination.
- e. Are past your re-certification date.
- f. Depending on type of certification a safety violation may cause certification to be revoked.

## *Other requirements and responsibilities*

### **14. What about hazardous duty pay?**

Never use anything in this chapter to justify hazardous duty payments, environmental differential pay, or premium pay. Jobs that qualify for hazardous duty pay aren't necessarily covered by this chapter. See NPD 3000.1, "Management of Human Resources", and the Federal Personnel Manual for information on hazardous duty pay.

### **15. Where can I get more information on hazardous operations?**

You can find more information on hazardous operations in these documents:

- a. 29 CFR 1910.38, "Employee Emergency Plans and Fire Protection Plans"
- b. NPG 8715.3, "NASA Safety Manual"

### **16. Who else has responsibilities for hazardous operations?**

a. As a **supervisor**, you must:

- Obtain, complete, and distribute required permits.
- Monitor hazardous operations to make sure the requirements on the permit and in this manual are followed for any hazardous operation.
- Provide detailed safety instructions for safe operations to employees who are authorized access to hazardous areas or who do hazardous operations.
- Identify operations that could be hazardous. Analyze these operations to determine the risk to personnel, equipment, and facilities.
- Monitor training schedules to ensure adequate time for the required training of employees and line managers.

b. As a **line manager** you must:

- Make sure that hazardous operations that require certification are done only by employees with a valid certification.
- Manage a training and certification program for your organization. This includes providing all training and testing necessary to qualify your employees and



certifying them after they show they have the necessary knowledge and skills.

- Keep a master list of: all operations that require certified personnel, employees that are certified for those operations, certification examiners, and certification officers in your organization.
  - Keep completed certificates and supporting records current. Protect employee training records under NPD 1382.17, "Privacy Act - Internal NASA Direction in Furtherance of NASA Regulation".
  - Recommend candidates for certification examiners.
- c. As a **safety representative** or **certified confined space supervisor**, you must review each permit to make sure requirements are followed and that personnel listed on permits have valid and current certifications if required.
- d. As a **contracting officer**, you must make sure contracts contain hazardous operations requirement as necessary.
- e. The **WFF Safety Office** must:
- Review all operations being done at WFF or WFF field sites to identify those that could be hazardous. Employee safety and health committees and employee representatives will help identify hazardous operations as requested.
  - Monitor WFF operations to make sure that only certified personnel are assigned to tasks described in this chapter.
  - Survey selected areas to determine the effectiveness of the certification program.
- f. The **Health Unit & Safety Office** must sample and monitor environmental conditions and provide professional medical support and surveillance as needed.
- g. They must provide training courses for hazardous operations as requested by line management and the WFF Safety Office. These courses must qualify personnel for certification.

# Chapter 11

## Worker's Compensation

### 1. Who must follow this chapter?

You must follow this chapter if you are a civil service employee at WFF. If you work at a WFF field site, you must follow local requirements that meet the intent of this chapter.

Paragraph 6 of this chapter lists the responsibilities of the compensation claims officer or specialist. Paragraph 8 of this chapter lists the responsibilities of supervisors and the WFF Clinic.

### 2. What does this chapter cover?

This chapter tells you how to apply for workers' compensation benefits. The Federal Employee Compensation Act (FECA) provides workers' compensation benefits for civil service employees who are injured or become ill on the job. It also provides benefits to the survivors of those who die from job-related injuries or illnesses.

### 3. What if I am a contractor employee?

If you are a contractor employee, follow your company's process to apply for workers' compensation benefits.

### 4. How do I apply for workers' compensation as a civil service employee?

To apply for workers' compensation, you must:

- a. Tell your supervisor and go to the WFF Health Unit if you have a job-related injury or illness.
- b. Call the compensation specialist at (301) 286-7409 to discuss your benefits and request a Form CA-1. Complete the Form CA-1, have your supervisor sign it, and send it to the Occupational Health Office as soon as possible.

If you are injured, you must file a written notice of your injury on a Form CA-1 within 30 days of the injury to qualify for continuation of pay.

- f. Get prior authorization from the compensation claims specialist before you seek private medical care. If it is an emergency, you may get private medical care without

authorization. You must contact the compensation claims officer or specialist during the next working day.

- g. Provide all information required to process your claim.
- h. Submit to a medical examination if required to determine if you are medically disabled. If you don't submit to a medical examination, your claim may be denied.
- i. Return to your job if you are found fit for full duty.
- j. Accept a light duty assignment if you are partially disabled. Your attending doctor will determine your workload and length of time on light duty.

## **5. What do I do in an emergency?**

If an employee is injured in an emergency:

- a. Call your emergency number. The ambulance personnel will decide if the injured employee should go to the Health Unit or to a hospital.
- b. If you are the employee's supervisor, you should go with the employee or send a coworker with the employee to the hospital.
- c. If you go with an injured employee to the hospital, contact the compensation claims specialist when you arrive. The compensation claims specialist will authorize medical treatment at that time.
- d. If you are the employee's supervisor, you should contact the compensation claims specialist immediately after the ambulance personnel begin treating the injured employee and report the following:
  - Name of the employee
  - Whether the employee is a civil servant or contractor
  - The nature of injury
  - When, where, and how it happened
  - The names of any witnesses
  - Where the employee was taken

Remember, your emergency number is 911 at WFF

## **6. What does the compensation claims officer or specialist do?**

The compensation claims officer or specialist will:

- a. Counsel you and your supervisor about your responsibilities

- and benefits you have after an on-the-job injury or illness.
- b. Help you and your supervisor complete the necessary forms, process the necessary forms he or she must complete, and submit the forms as soon as possible to the Office of Workers' Compensation Programs.
  - c. Monitor your claim and your medical information after it is approved to determine when you may return to work.
  - d. Authorize a clinic medical officer, your own doctor, or a hospital of your choice, to treat you.
  - e. Work with your supervisor, the Human Resources Office, and other management officials to provide you light duty assignments and make reasonable accommodations if you are partially disabled by job-related injuries.
  - f. Contact the Office of Workers' Compensation Program, to get the status of your claim, payment for compensation, and medical care.
  - g. Advise your supervisor, the WFF Safety Office, and the Payroll Office how to charge lost time.
  - h. Monitor all claims to verify all requirements are followed and only valid claims are paid. Submit necessary medical reports to the Office of Workers' Compensation Programs.

## **7. Where can I get more information on workers' compensation?**

You can find more information in NPD 1840.1, "NASA Workers Compensation Program."

## **8. Who else has responsibilities for workers' compensation?**

- a. As *supervisor*, you must:
  - Make sure that your employees know and fulfill their responsibilities in Paragraph 4 of this chapter.
  - Fulfill your responsibilities in Paragraphs 4 and 5 of this chapter.
  - Help an injured or ill employee complete workers' compensation forms.
  - Make sure lost time for injured employees is correctly charged. Contact the compensation claims specialist or Payroll Office for help.
  - Contact compensation claims officer or specialist if you have valid proof that a claim should be denied as soon as possible.
  - Support the investigation of mishaps that results in a

workers' compensation claims.

- Take action to prevent such mishaps from happening again.

b. **Health Unit** must:

- Provide emergency or first aid care for job-related injuries or illnesses.
- Document job-related injuries or illnesses.
- Give the compensation claims specialist any medical information required to support or deny a claim.

# **Chapter 12**

## **Hazard and Job Hazard Analysis**

### **1. Who must follow this chapter?**

You must follow this chapter if you:

- a. Do job hazard analyses or hazard analyses.
- b. You are a project manager, contracting officer, WFF's Sr. Manager, or the Head, WFF Safety Office, Paragraph 19 of this chapter lists your responsibilities.

### **2. What does this chapter cover?**

This chapter gives you basic requirements for doing job hazard and hazard analyses and for managing risk for ground-based jobs and systems.

### **3. Why must I do job hazard analysis and hazard analyses?**

You do job hazard and hazard analyses to make sure your job or system is as safe as possible. These analyses use systematic methods to:

- a. Find the hazards in your job or system.
- b. Remove those hazards if possible or take steps to control them in a timely, cost effective manner and reduce the risk to an acceptable level.

### **4. What is job hazard analysis and when must I do it?**

You must do a job hazard analysis for any job that has the potential to inflict injury or death and/or cause occupational injury or disease to an employee or destruction of property. In this chapter, "job" means a task someone does, rather than his or her position. Job hazard analysis involves:

- a. Breaking the job or task into activities.
- b. Finding the hazards of each activity and controlling those hazards.
- c. Having your supervisor approve the analysis and make decisions about hazards you can't control yourself. Higher management must review and accept or reject the risk of any uncontrolled hazard that could cause death, major injury, or major property damage.

## *Hazard analysis and system safety*

### **5. What is a hazard analysis?**

A hazard analysis is an organized method for identifying hazards and hazard controls in a system at any point in its life cycle.

### **6. When must I do a hazard analysis?**

You must start planning for and doing hazard analyses in the early design phases for any of the following systems and operations:

- a. Aircraft systems
- b. Facilities and hazardous facility systems such as test or oxygen systems
- c. Support equipment such as test, maintenance, or training equipment
- d. Software for any of the above systems
- e. Prototypes of any of the above systems
- f. Other systems or operations when required by other chapters in this handbook
- g. Operations and support activities such as:
  - Constructing facilities and making hardware
  - Experimenting on and testing systems
  - Storing, packing, or transporting systems
  - Checking out and using systems
  - Maintaining or modifying systems
  - Retrieving, disassembling, or disposing of systems

### **7. What are the basic elements of a system safety program?**

A system safety program may be simple or complex, depending on the project. As a part of your system safety program, you should:

- a. Start with a preliminary hazard analysis on each proposed concept.
- b. Use the preliminary hazard analysis to:
  - Document the hazards of each design concept or operation you are considering.

- Use lessons learned from past experience.
  - Define safety requirements for the project.
  - Help you select which design concepts or operations to choose.
  - Plan future safety efforts. These could include what other hazard analyses you should do and what techniques you should use such as subsystem hazard analyses operation and support hazard analyses, fault tree analyses, and/or hazard operability studies.
- c. Use hazard analyses to support trade-off studies of different design and operational concepts during each phase of the project.
  - d. Decide which hazard controls to use. Eliminate hazards with design measures as much as possible. Use other controls for those you can't eliminate by design.
  - e. Analyze your system's proposed operation for hazards. Consider all phases of your system's operation such as test, startup, operation, maintenance, and disposal.
  - f. Decide what risk is acceptable to your project.
  - g. Assess and accept the risks of the system or its operation after you have controlled the hazards by:
    - Using the most effective hazard controls that will be cost effective and won't prevent the system's mission from being accomplished.
    - Looking at the risk each hazard poses and decides if it is acceptable or if you should do more to control it and lower the risk.
  - h. Have the right level of management accept risks.
  - i. Document all risk decisions and their rationale.
  - j. Send copies of safety analysis reports and hazard analyses to NASA Headquarters as requested.

## **8. What must my hazard analysis contain?**

Your hazard analysis must contain at least the following information:

- a. The system's name and location.
- b. The hazards of the system and their causes. Include hazards from human factors as well.
- c. The consequence of each hazard if it were to cause a mishap. For example, death, major injury, minor injury, or estimated property damage and dollar amount.
- d. Any existing engineering or administrative controls for each



hazard.

- e. Proposed engineering or administrative controls for each hazard, if the existing controls are inadequate.
- f. What would happen if the engineering or administrative controls failed?
- g. A qualitative evaluation of the possible safety and health effects before and after the controls are in place.
- h. Who was on the team that did the hazard analysis?
- i. When was the last time you analyzed the system.
- j. A qualitative evaluation of the risk before and after the hazard controls are in place. This is the risk that management will have to accept.
- k. A plan to inform all employees that may be exposed to any hazard that cannot be eliminated.

## **9. How do I assess risk?**

You must use a risk assessment code (RAC) matrix to assess the risk of each hazard. WFF uses this system to make sure that risk assessments are consistent. To use this matrix:

- a. Find the "severity" or the worst-case outcome of a mishap from the hazard along the left side of the matrix.
- b. Find the "frequency" that you expect the mishap to occur across the top of the matrix.
- c. Find the RAC in the box where the "severity" and "frequency" cross.

**PROBABILITY  
ESTIMATE  
(FREQUENCY)**

S E V E R I T Y	<b>SEVERITY ESTIMATE</b>	<b>A Frequent</b>  Likely to occur one or more times a year	<b>B Probable</b>  Likely to occur once in 1 - 2 years	<b>C Occas ional</b>  May occur once in 2 - 5 years	<b>D Remote</b>  Unlikely to occur, but possible within 5 years to end of system life	<b>E Improbable to occur</b>
	<b>I Catastrophic</b>  Death, several serious injuries or illnesses, or Damage over \$1,000,000	1	1	2	3	4
	<b>II Critical</b>  Serious injury or illness, several lost workdays, or Damage between \$250,000- \$1,000,000	1	2	3	4	5
	<b>III Marginal</b>  Lost workday, several minor injuries, or Damage between \$25,000- \$250,000	2	3	4	5	6
	<b>IV Negligible</b>  Minor injury or Damage less than \$25,000	3	4	5	6	7

## 10. What does each RAC mean?

The table below tells you what action you must take for each RAC.

<i>If the RAC is . . .</i>	<i>Then the risk is . . .</i>
1	<p>Unacceptable – Correct within 24 hours using permanent or temporary engineering or administrative controls to reduce the hazard to a RAC 3 or 4.</p> <p>Or use engineering or administrative controls to reduce the hazard to a RAC 3 or 4 before the system goes into operation.</p> <p>All operations must cease immediately until the hazard is corrected or until temporary controls are in place and permanent controls are in work. A safety professional should stay at the scene at least until temporary controls are in place.</p> <p>RAC 1 hazards have the highest priority for hazard controls.</p>
2	<p>Undesirable – Correct within 3 working days using engineering or administrative controls to reduce the hazard to a RAC 3 or 4 or less.</p> <p>Use engineering or administrative controls to reduce the hazard to a RAC 3 or 4 before the system goes into operation.</p> <p>All operations must cease immediately until the hazard is corrected or until temporary controls are in place and permanent controls are in work.</p> <p>RAC 2 hazards are next in priority after RAC 1 hazards for control.</p> <p>Program Manager or Center Director may accept the risk with adequate justification</p>
3	<p>Acceptable with controls – Correct hazard within 30 days and verify that documented procedures and controls are in place.</p> <p>Or correct hazard before system goes into operation.</p> <p>Organizational Director or equivalent management may accept the risk with adequate justification</p>
4,5,6 & 7	<p>Acceptable with controls – Correct hazard within 90 days or before system goes into operation.</p> <p>Division Chief or equivalent management may accept the risk with adequate justification</p>

## 11. How do I control hazards?

Use these steps to decide what corrective action to take for any hazard found during your analysis. Take the following actions in the order below to control a hazard. Go to the next step only if the present step or previous steps aren't feasible or are too costly:

- a. Change the design so you eliminate or reduce the hazard. For example, use a less hazardous material or lower voltage if you can.
- b. Install safety devices or guards. For example, use safety interlocks, machine guards, or relief valves if you can.
- c. Install caution and warning devices. For example, use oxygen monitors or alarms if you can.
- d. Use administrative controls, such as special work procedures, training, administrative barriers, and signs.
- e. Use personal protective equipment.
- f. Accept the risk as described in Subparagraphs 8.h and 8.i of this chapter.
- g. Educate

You must also make sure that all hazards are controlled. To do this, you must track each hazard and keep it "open" until one of the above actions has occurred.

## *System safety plans and reviews*

### **12. What safety plans must I develop for my project?**

As a project manager, you must develop a safety management plan for the project that describes how you will manage the safety effort. Each WFF organization or contractor working on the project must develop a system safety program plan that describes its system safety effort. You may combine the two plans if possible. Your plans must follow these rules:

- a. The safety management plan must meet the requirements in NPG 8715.3, "NASA Safety Manual". This plan describes the objectives of your safety program, and methods to conduct and control your safety program.
- b. Plans must:
  - Be done before the project begins.
  - Describe engineering and management tasks for system safety.
  - Tailor the system safety program to the project based on the project's complexity, cost, criticality, or management structure.
  - Allow for free communications among all persons and organizations working on the project.
  - Be updated as the design matures.
  - Include budgets, responsibilities, and applicable safety

requirements.

- Include a system safety task schedule that supports the project schedule.

### **13. What safety reviews must my project have?**

As a project manager, you must have a safety review either before or as a part of each project review. Project reviews may include preliminary design reviews or 30% design review, Operational Readiness Inspections, etc. Safety reviews must:

- a. Status your system safety program.
- b. Review hazards found before the review and prioritize them by risk.
- c. Review other system safety products such as safety assessment reports.
- d. Decide if you should change the design, study other options, or do more hazard analysis.

### **14. What additional safety reviews or surveys should my project have?**

Any of the following reviews or audits will help you evaluate the safety of your project during design or operation. You should use them when appropriate:

- a. Special surveys for very hazardous systems or for changes to these systems to make sure those risks are properly identified and managed.
- b. A review by experts outside your project during readiness reviews such as test readiness reviews, operational readiness inspections, or acceptance reviews.
- c. System safety audits by WFF organizations or NASA Headquarters for major projects and facilities. These audits should be done periodically and consider:
  - Did the system perform as planned?
  - Were all the hazards identified and controlled effectively?
  - Did the hazard and risk analysis result in effective risk decisions?
  - Have design or operational changes increased the risk of the system?

### *Other requirements and responsibilities*

### 15. What must I do with the hazard analysis after I am done?

You must keep the analysis and review it at least every 5 years while the project is active. This will allow you to see how valid your analysis was after you have had some experience with the system.

### 16. What if I change the job, system, or operation?

If you intend to change your job, system, or operation you must:

- a. Hold a safety review, update the existing hazard analysis, or do a new hazard analysis to make sure that the change doesn't create a hazard.
- b. Analyze any change proposed to correct a hazard to see if it will effectively control the hazard.

### 17. What other requirements must I follow for job hazard and hazard analyses?

In addition to this chapter, you must follow the requirements in these documents.

<i>For . . .</i>	<i>Follow this standard . . .</i>
Job hazard and hazard analyses on WFF ground-based systems	NPG 8715.3, "NASA Safety Manual"
Failure tolerance requirements for safety critical functions	NPG 8715.3, "NASA Safety Manual"
Product safety	29 CFR 1960.34 (b)
Ground-based chemical processes	29 CFR 1910.119

### 18. Where can I get more information on job hazard and hazard analyses?

You can find more information on job hazard and hazard analyses in these documents:

- a. NPG 8715.3, NASA Safety Manual
- b. Langley Research Center Handbook 1740.4, Facility System Safety Analysis and Configuration Management
- c. NPG 8820.2, Facility Project Implementation Handbook
- d. MIL-STD-882, System Safety Program Requirements
- e. Work Center Safety Guide

## 19. Who else has responsibilities for job hazard and hazard analyses?

- a. **WFF's Organizational Leads** have the final authority for all system safety products and risk management decisions for systems and facilities at WFF and WFF field sites. He or she will appoint a senior manager at WFF and each field site to serve as the site manager for risk management decisions involving WFF personnel, property, and operations.
- b. As a **project manager** for any new or modified system, facility, or operation at WFF or a WFF field site, you must:
  - Develop a system safety program for your project early in the planning phase.
  - Make sure everyone on the project follows your system safety program.
  - Appoint a system safety manager to administer your system safety program. NPG 8715.3 lists system safety managers' responsibilities.
  - Approve a safety management plan and any system safety program plans that may be required.
  - Report hazards that could result in death, major injury, or major property damage to anyone or anything outside the project and other hazards as required to higher management.
  - Fulfill the responsibilities in NPG 8715.3.
- c. The **Head, Safety Office**, must provide personnel to:
  - Help WFF organizations develop system safety programs or help them do job hazard or hazard analyses.
  - Make sure that system safety products are complete and accurate and that management is properly accepting risk and documenting its decisions.
  - Support project and safety reviews to make sure that the system safety program is being followed.
  - Form a WFF System Safety Steering Committee as described in NPG 8715.3 to make sure system safety requirements are applied consistently.

# **Chapter 13**

## **Fire Safety Program**

### **1. Who must follow this chapter?**

You must follow this chapter if you work at WFF or at a WFF field site.

### **2. Why does WFF have a fire safety program?**

WFF's fire safety program seeks to apply recognized standards to protect life and property from fire. It also provides you standard procedures for evacuating buildings in case of a fire. A strong fire safety program also makes you more aware of fire safety and fire hazards so that you:

- a. Maintain a safe and healthy workplace.
- b. Reduce the chance of death, injury, or property damage from fire.

### **3. What does WFF's fire safety program cover?**

WFF's fire safety program covers three areas of fire protection: prevention, detection, and suppression. It provides consistent, comprehensive methods for WFF to prevent fires and deal with them if they happen. The program covers:

- a. Fire prevention which includes:
  - Management supporting and following fire rules, regulations, and codes
  - Education, training, and motivation of all employees in the causes and prevention of uncontrolled fires
  - Building fire warden program
  - Inspections of all work areas and other facilities to identify possible fire risks
  - Fire risk assessments of mission operations, test configurations, laboratory equipment, storage areas, flight hardware, essential data and records, and high value or mission critical equipment
  - Design and construction of buildings that limit the spread of fire and smoke.
  - Fire drills, emergency evacuation plans, and emergency action plans



b. Fire detection which includes:

- Installing and maintaining smoke and heat detectors throughout buildings
- Installing manual pull stations near outside exits and entrances to stairwells

c. Fire suppression includes:

- Installing and maintaining sprinkler, carbon dioxide and other fire extinguishing agent systems
- Inspecting monthly and maintaining portable fire extinguishers
- Maintaining a full trained and staffed fire department to respond to all fire emergencies.

#### **4. What do I need to know about the WFF fire safety program?**

As a WFF employee, you must take measures to prevent fires in your work area and react properly if a fire occurs. Employees are not to fight a fire. You should sound the alarm and ensure that an evacuation is initiated. If you are a fire warden or do safety inspections, you must know the other requirements in this chapter.

### *Fire warden program*

#### **5. What is the building fire warden program?**

WFF's building fire warden program provides at least one fire warden per building to oversee building fire safety. The following requirements apply:

- a. Each building at WFF and WFF field sites must have a chief fire warden, an alternate fire warden, and as many floor fire wardens as needed. You must be able to evacuate the building at a rate of no more than one minute per floor.
- b. The Facility Operations Manager will serve as building's chief fire warden and the alternate facility manager as the alternate fire warden if they work in the building or if the building is unoccupied.

#### **6. What must I do as the chief fire warden?**

As the facility manager or chief fire warden, you must:

- a. Delegate fire warden responsibilities to someone who works in the building if you don't. You may delegate these

responsibilities to a WFF contractor if no civil service employees work in the building.

- b. Appoint as many floor fire wardens as you need to carry out the building emergency evacuation plan and other fire warden duties. This includes enough to meet the requirements in Subparagraph 5.a above and, as a minimum:
  - One fire warden per floor.
  - One fire warden per shift in buildings occupied for more than one shift per day.
  - Covering each restricted area with a fire warden who has access to the area.
  - Covering each hazardous work area or lab with a dedicated fire warden.
- c. Keep documentation that shows the areas assigned to each fire warden.
- d. Assign a designated area for the fire wardens to report to you after an evacuation.
- e. Make sure your fire wardens are trained on the building emergency evacuation plans. The WFF Safety Office will train selected individuals from each floor at your discretion.
- f. Make sure your fire wardens and safety representatives are familiar with the location of fire equipment such as fire extinguishers and fire alarm boxes.
- g. Critique each fire drill in your building within 3 working days after each drill or evacuation to review the good or bad points of the drill or evacuation. Update your emergency plan as needed.
- h. Hold meetings throughout the year to discuss fire drill critiques and other fire safety issues.

## **7. What must I do as a fire warden?**

As a fire warden, you have the authority to cross-organizational lines to enforce fire safety rules and make sure everyone follows the building emergency plan in your assigned area. Your primary responsibilities are:

- a. Inspecting your assigned areas monthly and keeping records of your inspections. File the originals of your records and send copies to your facility manager.
- b. Sweeping your assigned area during an evacuation. See Chapter 4, "Emergency Action and Planning," of this handbook for more information.

## **8. What training must a fire warden have?**

As a fire warden, you must have fire warden training that covers your responsibilities, recognizing and correcting fire hazards, fire extinguishers, evacuation techniques, as well as other training deemed necessary. You get this training from the WFF Safety Office.

## *Fire inspections and surveys*

### **9. Will my office receive a fire and safety inspection this year?**

The WFF Emergency Services Personnel will inspect all work areas and operations at WFF workplaces at least yearly to:

- a. Identify any fire safety problems with facility construction and operation so they can be corrected.
- b. See what short-term and long-term repair, rehabilitation, modification, and construction projects are needed to correct fire safety problems.

See Chapter 8, "Safety and Health Inspections," of this handbook for more information.

### **10. What is a fire risk survey?**

The WFF Safety Office will survey all WFF work areas and operations at least every 3 years or when a facility is built or modified. The fire risk survey isn't intended to be an all-encompassing engineering survey, but will try to find obvious fire hazards with normal facility operations.

- a. The survey will look at the following:
  - Exit routes and posted facility evacuation plans
  - Integrity of fire protection systems
  - Manual and automatic fire detection systems
  - Manual and automatic fire suppression equipment
  - Heating, ventilation, and air conditioning systems, if accessible
  - Normal and emergency lighting systems and power systems
  - Separation and protection of hazardous operations and material
  - Elevators
  - Other fire safety features as deemed necessary

b. The fire risk survey will also include the following:

- The adequacy and reliability of the water supply
- Fire department response
- Alarm monitoring equipment
- Emergency procedures
- Common fire safety deficiencies
- Fire risk analysis

For those deficiencies that you can't correct within 30 days, you must prepare and post a hazard abatement plan, as required by 29 CFR 1960.30, "Abatement of Unsafe and Unhealthful Working Conditions." See also Chapter 6, "Reporting and Correcting Hazards," of this handbook.

## *Other requirements*

### **11. What about fire drills?**

Buildings with ten or more employees assigned or areas where hazardous material testing is done will have at least one fire drill per calendar year. The WFF Fire Department will conduct this drill. Use the Facility Operations Manager's Handbook as a guide in conducting fire drills and evacuations. These requirements apply to fire drills:

- a. Building fire wardens will receive notice stating the date and time of the drill. If the drill cannot be conducted when scheduled, it must be rescheduled. It will be a surprise to the building occupants.
- b. Fire wardens are responsible for all persons involved in a fire drill and that to see that drill procedures are followed.
- c. When everyone has evacuated the building and is accounted for, the Fire Department will declare the drill terminated. Fire wardens may then notify building occupants to return to the building.
- d. Any actual evacuation caused by a fire protection system, whether real or due to a malfunction, will count as an annual drill.

### **12. What is a facility evacuation plan?**

A facility evacuation plan (FEP) is a schematic drawing showing you how to evacuate a building. All WFF buildings must

have an FEP except small single room buildings. The FEP must:

- a. Be based on the floor plan and show the preferred and secondary exit routes from all occupied areas of the building. Usually, the following conventions apply:
  - A solid red line marks the primary exit routes and a dashed red line marks the secondary.
  - Red boxes mark manual pull stations.
  - Yellow triangles indicate locations for fire department standpipe connections that usually house fire extinguishers.
  - Include "EXIT," "YOU ARE HERE," triangles, and box stickers.
  - Firefighter-operated elevators for the physically impaired are outlined in red.
- b. Include details on evacuating disabled persons.
- c. Be posted on the wall, usually at the elevator on each floor. The building's complexity will determine where the plans should be posted. Recommended conventions to follow are post it on north walls where north is up on the drawings or on west walls where west is to the right on the drawing.

### **13. What is a fire prevention plan?**

Each WFF building must have a fire prevention plan (reference Safety Standard for Fire Protection, NASA-STD-8719.11) that includes:

- a. A list of the major workplace fire hazards and procedures for properly handling and storing flammable or combustible materials.
- b. Potential ignition sources (such as welding, smoking, and others) and procedures for controlling them.
- c. The kinds of fire protection equipment or systems available in the building.

### **14. What about facility design, fire detection, and fire suppression?**

These are all design issues and involve meeting fire codes.

### **15. Who else has responsibilities under the fire safety program?**

The following individuals and organizations have responsibilities under the fire safety program:

a. As an **organizational leader**, you must:

- Carry out WFF's fire safety program described in this chapter.
- Evaluate your operations and valuables inventories to make sure that no undue fire risks exist. The WFF Safety Office can help you do risk assessments or help you by providing technical assistance and fire code interpretations.

b. As a **line manager**, you must:

- Support your building fire warden program and evacuation plans as required. This includes supporting requests from your facility managers for fire wardens to cover your floor as described in Paragraph 6 of this Chapter.
- Make sure your employees evacuate the building when the fire alarm sounds.
- Be aware of any of your employees who may permanently or temporarily require help in an emergency. Also, be aware of any disabled person who might be visiting your area. Help disabled persons during evacuations under the building emergency action plan.
- Notify the fire warden if an assistant fire warden is absent and provide a trained alternate.
- Train newly assigned or employed disabled persons in the general emergency evacuation procedures from WFF buildings.
- Notify the facility manager whenever a disabled person who might need special help during an evacuation is assigned to his or her facility.
- Designate a common muster location for accountability purposes, so that every employee is accounted for after evacuation.

c. As a **Facility Operations Manager**, you must manage the fire safety program in your facility with the help from the line managers, contract project managers, and assistant fire wardens. This includes the following:

- Make sure everyone in your building follows facility fire rules, regulations, and fire codes. This is done through education and training in the causes and prevention of fires.
- Serve as the chief fire warden for your facility.
- Carry out your responsibilities in Paragraphs 5, 6, and 7 of this chapter.

- Conduct a yearly evaluation with a fire protection and safety engineer of your operations and valuable inventories to make sure that no undue fire risk exists.
  - Conduct your own periodic fire inspections of your facilities.
  - Prepare the facility evacuation plan for your facility and post diagrams of the plan in prominent places in the facility.
  - Be aware of all maintenance or construction work that takes place in your facility and the associated fire risk it may create.
- d. As a **fire warden**, you must help the facility operations manager (chief fire warden) and alternate fire warden in carrying out their fire warden duties.
- e. As a **contracting officer**, you must concur on the delegation of fire warden responsibilities to any contractor employees on your contracts. Make sure contractor supervisors meet their fire safety responsibilities.
- f. WFF's **Senior Official** must appoint in writing a safety or fire protection professional as the "Authority Having Jurisdiction" for fire protection at WFF.
- g. The **WFF Safety Office** must:
- Oversee the fire safety program.
  - Direct the technical aspects of the WFF fire protection activity, including the provision of adequate fire fighting and rescue capabilities.
  - Monitor the building fire warden program and provide initial and refresher fire warden training.

# Chapter 14

## Radiation Protection Program

### 1. Who must follow this chapter?

You must follow this chapter if you perform or oversee any radiation operations at WFF or WFF field sites. Paragraph 11 lists the responsibilities of supervisors, line managers, and the WFF Safety Office.

### 2. What forms of radiation are covered by this program?

Three general classifications of radiation are covered by this Chapter.

Ionizing Radiation: radiation that has sufficient energy to remove electrons from atoms.

Light Amplification by Stimulated Emission of Radiation (Laser): optical radiation that propagates in the form of a beam and has special properties including low divergence, monochromatic, and coherence.

Radiofrequency (RF) and Microwave Radiation: The spectral region between 3KHz to 300 GHz.

### *Requirements for radiation operations*

### 3. What requirements must I follow for any radiation operation?

- a. If you perform or oversee ionizing radiation operations, you must follow the requirement specified in GPR 1860.1A
- b. If you perform or oversee Laser radiation operations you must follow the requirements specified in GPR 1860.2A
- c. If you perform or oversee RF/Microwave radiation operations you must follow the requirements specified in GPR 1860.3
- d. Access to the GPR's and related forms are located on the internet on the Goddard Directives Management System (GDMS) <http://gdms.gsfc.nasa.gov/gdmsnew/home.jsp>

### 4. What requirements must I follow for ionizing radiation operations?

To become an approved user or approved custodian an applicant must submit GSFC Form 23-35IP to the appropriated branch head



for concurrence and then forward to the Goddard Radiation Safety Committee (RSC) with a copy forwarded to the WFF Occupational Safety and Health Group (OSHG). Form 23-35IP requires the applicant to identify appropriate training and experience, and the source(s) to be used. The GSFC radiation safety committee will evaluate all applications and will inform the applicant of the committee's determination.

Prior to bringing a source or device containing a radiation source on site an applicant must submit GSFC Form 23-28I to the appropriated branch head for concurrence and then forward to the RSC with a copy forwarded to the WFF OSHG. Form 23-28I requires the applicant to provide a detailed description of the source or instrument. The GSFC radiation safety committee will evaluate all applications and will inform the applicant of the committee's determination.

#### **5. What do I need to do after becoming an approved user?**

- a. Renew approval every 2 years.
- b. Submit GSFC Form 23-6I when a source is moved from one location to another.
- c. Contact the RSC and receive written approval prior to any offsite use or for launches.
- d. Refer to GPR 1860.1A regarding train requirements based on source and use criteria.
- e. Attend retraining as specified.
- f. In the event a source is lost or misplaced report the discovery immediately to the Occupational Safety & Health Group.
- g. Adhere to any safety precautions or operating procedures specified by the RSC for your operation.
- h. Prepare an emergency plan and coordinated activities with the WFF OSHG.
- i. Other requirements depending on the source may include: Personnel monitoring, Personal protective equipment, Medical surveillance, Inventory records, waste disposal, signage, and leak tests. These requirements will be identified by the RSC prior to approving the use of a radioactive material.

#### **6. What should I do in the event a radiation safety problem arises?**

- a. Leave the hazard area. All persons that were present at the time of the emergency, or that arrived after the emergency, will remain in the vicinity but at a safe distance unless they require medical treatment.

- b. Isolate the hazard, if possible (i.e., close doors and shut off ventilation).
- c. Warn others of the hazard.
- d. Immediately report the emergency to the Fire Department by dialing 911 or 1333.
- e. Report events of the incident to OSHG representative.
- f. Obtain clearance from OSHG personnel before leaving the immediate vicinity or before returning to the work area.

## **5. What are the requirements for shipping and receiving radioactive materials? (This includes equipment with sealed sources)**

- a. All shipments of radioactive material shall be coordinated through WFF OSHG.
- b. Users shall notify WFF OSHG of any requirement for an incoming shipment, outgoing shipment, or onsite transfer sufficiently in advance to make the necessary arrangements.
- c. WFF OSHG shall keep records of all shipments and transfers of radioactive materials involved in WFF operations. For each shipment, this shall include GSFC Form 23-26, GSFC Form 23-27, and a copy or reference to any applicable GSFC 20-4 Shipping/Receiving Request. The record copy of the 20-4 shall be kept as defined by GPR 6400.1.

## **6. What requirements must I follow for any laser operations?**

To become a laser custodian or user you need to obtain certification from the line management responsible for the operations and submit a GSFC Form 23-35LU to the Wallops Occupational Safety and Health Office and then it is forwarded to the Laser Safety Sub Committee at Greenbelt. This approval expires after 2 years. A baseline eye exam approved by your employer(s) is required as part of a one time preliminary certification process. Additional exams shall be administered after any suspected exposure and are recommended upon stopping work with lasers. A baseline eye exam shall consist of: ocular history, visual acuity test, central visual fields test, contrast sensitivity test. If results of any of the above tests are abnormal, a more in-depth evaluation may be required if determined necessary by the medical provider.

Procurement, Manufacture, Alterations, or New Installations of Laser Radiation Sources When any Class 3b or Class 4 lasers or laser radiation sources are to be procured, manufactured, altered or a new laser installed, a GSFC Form 23-28L shall be submitted to Wallops Safety Office. This form should also be used for assistance in the determination of laser classifications.

Users of fiber optics communications systems shall follow guidance provided in ANSI Z136.2. Since these systems may contain Class 3b or Class 4 lasers, custodians of open-ended

optical fibers and LEDs containing Class 3b or 4 lasers shall seek approval by the Laser Safety SubCommittee through the LSO.

Laboratory Operations Approval procedures and methods are established to assure that work with sources of laser radiation is performed with due regard for radiological safety. To request approval for operations, a GSFC Form 23-6L shall be submitted and received by LSO at least 2 weeks prior to the work date for adequate processing. Complicated systems, procedures, flight projects, or extremely hazardous operations will take longer to acquire final approval. These systems should be coordinated with the LSO in the early planning stages to assure that there is no impact to mission schedule. The GSFC Form 23-6L and Laser Safety Procedures need to be renewed every three years.

## **7. What requirements must I follow for any outdoor laser operations?**

a. It should be noted that ALL classes of lasers used outdoors must be approved by the LSO and the Laser Safety SubCommittee since even Class 1 laser systems may present a hazard to aircraft operators. All protective systems shall be supported by qualitative and quantitative safety/hazard analysis. Unless otherwise noted, all ANSI Z136.6 recommendations are incorporated by reference as requirements, and will take precedence over any less rigorous requirement in this document. Proposed protective systems shall be submitted to the LSO and LSSC for approval (GSFC Form 23-6L). All supporting documentation will be included.

b. Laser systems directed towards outer space (which might disrupt orbiting satellites) shall have an approval from the Laser Clearing House, Space Defense Operations Center (SPADOC) on file with the LSO and LSSC. See ANSI Z136.6 for information on which outdoor laser systems require approval from the Laser Clearing House. Information sheets for submission to the Laser Clearing House are available from the LSO.

c. Federal Aviation Administration (FAA) coordination is required for all operations that will transmit laser energy through navigable air space controlled by the FAA. Coordination with the FAA shall be accomplished through the LSO and LSSC by submitting GSFC Form 23-67A and GSFC Form 23-67B.

d. Special Requirements: If any organization or other entity objects to outdoor propagation of a laser beam, notification requirements must be followed as described in Appendix B of

GPR 1860.2.

e. Access doors to a controlled outdoor laser area and the accessible NOHD ground beam path in which a laser system with greater than 5mW total accessible power is being operated shall be equipped with safety interlocks to prohibit laser beam propagation when the interlock circuit is broke. Personnel accessing a controlled laser area shall be regulated by the use of a Safety Access light. The Safety Access light should be visible through protective eyewear.

## **8. What requirements must I follow for non-ionizing radiation operations?**

a. To become an approved user or operator an applicant must submit GSFC Form 23-35RF to the appropriated branch head for concurrence and then forwarded to the WFF Occupational Safety and Health Group (OSHG). Form 23-35RF requires the applicant to identify appropriate training and experience, and a list of equipment or systems the user will operate or maintain. The WFF RF committee will evaluate all applications and will inform the applicant of the committee's determination.

b. Prior to bringing a devise or constructing a source that emits RF or Microwave frequencies an applicant must submit a Frequency Request form to the Wallops RF committee. The committee will evaluate the application and will inform the applicant of the committee's determination. All applications will be approved- without restrictions, approved with restrictions, or disapproved.

### **Exempted Item Categories**

The following general categories of radio frequency/microwave radiation devices are exempted:

- a. Speed monitoring devices (radar guns);
- b. Automotive radar detectors;
- c. Microwave ovens designed for home use;
- d. RF/microwave radiation devices designed for and operated in a completely enclosed configuration where no open-air transmission is possible;
- e. RF/microwave radiation devices designed to operate in a hard-lined, closed loop configuration where no open air transmission is possible

## **9. What do I need to do after becoming an approved user?**

- a. Renew user approval every 2 years (GSFC Form 23-35RF).
- b. Participate in RF hazard awareness refresher training at least every two years and prior to submitting user renewal application.
- c. Adhere to any safety precautions or operating restrictions noted on the approved Frequency Request received from the Wallops RF committee.
- d. Prepare an emergency plan and coordinated with the WFF OSHG.
- e. Other requirements depending on the source may include: Personnel monitoring, Personal protective equipment, Medical surveillance, Inventory records, waste disposal, signage, and leak tests. These requirements will be identified by the RSC prior to approving the use of a radioactive material.

## 10. What should I do in the event a radiation safety problem arises?

- a. Leave the hazard area. All persons that were present at the time of the emergency, or that arrived after the emergency, will remain in the vicinity but at a safe distance unless they require medical treatment.
- b. Eliminate the hazard, if possible
- c. Warn others of the hazard.
- d. Immediately report the emergency to the Fire Department by dialing 911 or 1333.
- e. Report events of the incident to OSHG representative.
- f. Obtain clearance from OSHG personnel before leaving the immediate vicinity.

## 11. Who else has responsibilities for hazardous operations?

- h. As a *supervisor*, you must:
  - Obtain, complete, and distribute required applications for RF use.
  - Monitor operations to make sure the requirements on the Frequency Request Form are followed for any RF/Microwave operation.
  - Provide detailed safety instructions for safe operations to employees who are authorized use and maintain operations.
  - Identify operations that could be hazardous. Analyze these operations to determine the risk to personnel, equipment, and facilities.
  - Monitor training schedules to ensure adequate time for

the required training of employees and line managers.

i. As a **line manager** you must:

- Make sure that operations that require RF user approval are done only by employees approved by the RF committee.
- Manage a training and certification program for your organization. This includes providing all training and testing necessary to qualify your employees and certifying them after they show they have the necessary knowledge and skills.
- Keep a master list of: all operations that require RF user approval, the operations they are approved for, and copies of the GSFC Form 23-35RF.
- Keep completed certificates and supporting records current. Protect employee training records under NPD 1382.17, "Privacy Act - Internal NASA Direction in Furtherance of NASA Regulation".

j. The **WFF Safety Office** must:

- Review operations conducted at WFF sites to identify those that could be hazardous.
- Assist the WFF RF committee by reviewing user applications and performing RF radiation hazard evaluations for new sources.
- Monitor WFF operations to make sure that only qualified personnel are assigned to tasks described in this chapter.
- Conduct periodic RF measurements to verify compliance with RF restriction and provide RF measurements of any areas where a potential hazard may exist or identified by personnel as an area of concern.
- Perform periodic spot checks of system controls to include: administrative, engineering, and PPE.

# Chapter 15

## Standards for Safety and Health

### 1. Who must follow this chapter?

You must follow this chapter if you work at WFF or a WFF field site.

### 2. What Occupational Safety and Health Administration (OSHA) and federal standards must WFF follow?

WFF must follow safety and health standards issued under the Occupational Safety and Health Act and other federal regulations. This includes the following standards:

- a. **OSHA standards.** WFF must follow permanent and temporary safety and health standards issued by OSHA under Section 6 of the Occupational Safety and Health Act. WFF may follow alternate standards that NASA Headquarters and the Secretary of Labor approve as described in Paragraph 7 of this chapter.
- b. WFF must follow these **Other Federal Standards**:
  - Federal Aviation Administration standards applicable to public aircraft, since NASA operates its aircraft as public aircraft
  - Department of Transportation standards for shipping and handling hazardous materials
  - Environmental Protection Agency standards for recovering, controlling, and disposing of hazardous wastes
  - Nuclear Regulatory Commission standards for handling radioactive sources
  - The American Disabilities Act requirements for disabled employees
- c. WFF must follow any **consensus standards** referenced in this handbook.

### 3. What NASA Headquarters requirements and standards must I follow?

You must follow any NASA Headquarters safety and health requirements and standards called out in this handbook such as:

- a. NASA Policy Directives (NPDs)
- b. NASA Procedures and Guidelines (NPGs)



c. NASA Standards

#### **4. What WFF standards must I follow?**

This handbook references NASA Safety and Health Standards, NASA Policy Directives, Goddard Procedures and Guidelines (GPGs).

#### **5. What if I'm a WFF civil service employee working at another site?**

If you work at a non-WFF site, follow these rules:

- a. Follow local requirements and standards if another NASA center or federal agency oversees the site.
- b. Follow standards issued under Section 6 of the Occupational Safety and Health Act if you work in a government-owned, contractor-operated facility.
- c. Follow WFF or local requirements and standards at other sites (including foreign countries), whichever is more stringent.
- d. Tell your management if the requirements or standards at another federal agency's requirements conflict with OSHA standards. The following must be done:
  - You must follow the most stringent standards until the conflict is resolved.
  - Your management must tell the NASA designated safety and health official of the conflict.
  - The NASA designated safety and health official must tell the Secretary of Labor and the other federal agency of the conflict so that it can be resolved.

#### **6. How do I get a variance to safety and health requirements and standards?**

If you think you can't follow a requirement or standard, you must follow this procedure to get a variance:

- a. Prepare a written request for variance that includes:
  - What the variance is. Reference the requirement or standard.
  - How long you need the variance.
  - Why you need the variance. Give detailed justification on why you can't follow the requirement or standard.
  - Any other information, such as how you will provide equal



- protection to your employees.
- b. Have your director or program manager sign the request.
  - c. Send the request to the Safety Office who will evaluate the request and send it to higher management for more approvals if necessary.
  - d. This table tells you who must approve certain variances and what other requirements apply.

<i><b>Variances to</b></i>	<i><b>Must be approved by</b></i>	<i><b>Requirements and comments</b></i>
WFF requirements or standards	WFF Safety Office	Coordination with affected employees
NPD Policy	NASA HQ IPO or Enterprise	See NPG 8715.3 NASA Safety Manual section 1.19  Must be processed thru the Center Director and reported to OSHA
NPG Shall requirements	Center Director	See NPG 8715.3 NASA Safety Manual section 1.19
OSHA standards	NASA Headquarters and the Secretary of Labor	Requests must include very detailed justification and an alternate standard that provides equal or greater protection This process takes at least 3 months OSHA rarely approves variances See 29 CFR 1905, "Rules of Practice for Variances, Limitations, Tolerances, and Exemptions"
Other federal, state, or local standards such as EPA or DOT	NASA Headquarters and the agency that issued the standard	See the standard for details on how to get a variance WFF's Environmental Office must also approve requests for variances from any environmental protection standard
Consensus standard	Whoever the standard authorizes	See the standard WFF may be allowed to approve a variance if the standard includes the concept of "Authority having Jurisdiction"

## **7. How does WFF develop alternate or new standards?**

WFF may develop new standards when there is no OSHA standard. Alternate standards to OSHA must give employees the same safety and health protection as or greater protection than an OSHA standard. The Secretary of Labor must approve alternate standards. WFF must follow this procedure:

- a. WFF must tell NASA Headquarters about the proposed standard.

Headquarters will:

- Tell the Secretary of Labor about the proposed standard. For new standards, the Secretary of Labor will make sure no standard exists on the subject.
  - Tell WFF if the standard will be a NASA standard. If this is the case, WFF will be the lead Center to develop the standard.
- b. Safety or health personnel should write the standard with employees from line organizations and through safety and health committees.
- c. Line managers, employees, and union representatives should review the standard to make sure it provides enough safety and health protection to employees.
- d. The WFF Safety Office will send the standard to NASA Headquarters through GSFC with the following information:
- Why WFF can't follow the OSHA standard or wants an alternate or new standard
  - How an alternate standard gives employees equal or greater safety and health protection
  - What protective measures WFF is using to protect employees while waiting for the standard to be approved
  - All comments from WFF organizations
- e. NASA Headquarters will:
- Approve or disapprove the standard.
  - Have other NASA Centers review the standard if necessary.
  - Send the standard and supporting documentation to the Department of Labor for final approval as described in 29 CFR 1960.17 and 20 CFR 1960.18.
  - Publish and distribute the standard if it is a NASA standard.

## **8. What standards documentation must WFF send to NASA Headquarters?**

WFF must send the following to the Safety and Risk Management Division:

- a. Copies of WFF safety and health policy and requirements documents that implement NASA Headquarters requirements
- b. Comments sent to regulatory agencies such as OSHA on requirements that could impact NASA

# Chapter 16

## Committees and Councils for Safety and Health

### 1. Who must follow this chapter?

You must follow this chapter if:

- a. You are a line manager or a member of a permanent safety or health committee.
- b. You serve on a temporary committee to address a safety or health issue.

### 2. What do I need to know about committees and councils as a WFF employee?

As a civil service employee or contractor employee, you are encouraged to form and participate in safety or health committees. If you want to form a committee, tell your supervisor what committee you want to form and why. Use this chapter as a guide for your committee.

### 3. What committees does WFF have for safety or health?

WFF has three permanent safety and health committees. WFF, line managers, or employees may form other permanent or temporary committees as needed. Safety or health committees must follow the practices listed in Paragraphs 5, 6, and 7 of this chapter.

NASA chooses not to have the Secretary of Labor certify safety and health committees at NASA centers. This certification is optional.

WFF has the following committees:

- a. The **Executive Safety Committee** is composed of senior management and others, as needed, and reports to the WFF Senior Official. The Director of SSOPD chairs this committee.
- b. The **WFF Employee Safety Committee** is composed of:
  - Director of Suborbital and Special Orbital Projects Directorate (SSOPD) (Code 800)
  - Deputy Director of Suborbital and Special Orbital Projects Directorate (Code 800)
  - Assistant Director for Projects Support (Code 800)

- Resources Management Office (Code 801)
- Policy and Business Relations Office (Code 802)
- Safety Office (Code 803)
- Office of Public Affairs (Code 140)
- Assistant Director of Management Operations (Code 200)
- Flight Projects Directorate (Code 400)
- Assistant Director of Applied Engineering and Technology Directorate (Code 500)
- Observational Sciences Branch (Code 972)
- Employee's Representative (American Federation of Government Employees (AFGE))
- Wallops Contractor Safety Council Representative

c. ***The WFF Contractors Safety Council*** is composed of the WFF Contractors and reviews contractor safety issues. This group works with the other WFF committees to investigate and resolve safety issues. The Chairman of the Contractors Safety Council will be a member of the Executive Safety Committee.

d. ***Other safety or health committees***, either temporary or permanent, may be formed at any level of an organization. Participating in safety or health committees is one way that WFF employees can get involved in safety and health. The person who forms a committee will decide who the members will be. Committees should have charters. Other safety or health committees may:

- Address safety or health problems and requirements.
- Develop work practices that are safe and healthful.
- Develop and conduct safety and health training, awareness, or motivation activities.
- Do safety and health inspections.

#### **4. Who should be members of safety or health committees?**

Committee members may be elected by employees, be appointed by management, or volunteer. An alternate may fill in for any member who can't attend a meeting. In addition to the members listed in Paragraphs 3 and 4 of this chapter, division, branch, work area, and other committees should include the

following as needed:

- b. Union representatives
- c. Contractor safety representatives
- d. Safety and health personnel
- e. Technical advisors who have special expertise that a committee needs
- f. Managers or employees from other WFF organizations

## **5. How long do members serve on a safety or health committee?**

The time a member serves depends on the kind of committee. Follow these rules:

- a. For permanent committees such as division, branch, or work area committees, members will serve for at least 1 year. Replace only a few members at one time to maintain the committee's knowledge and experience.
- b. For temporary committees such as an ad hoc committee addressing a specific safety problem, members will serve until the committee finishes its work.

## **6. How does a safety or health committee function?**

A safety or health committee must:

- a. Take care of the following administrative duties:
  - Meet at least monthly if it is a permanent committee.
  - Meet as often as necessary to complete its work if it is a temporary committee.
  - Send out a meeting agenda far enough in advance so members and those with actions can prepare for the meeting.
  - Have all attendees sign an attendance sheet and keep the sheet in a file.
  - Record and send out minutes to members, higher management, attendees, and others such as those who have action items. Keep meeting minutes in a file.
- b. Address issues by:
  - Keeping the discussion on safety or health issues. Don't dismiss an issue because it seems unrelated to safety or health at first.
  - Considering each suggestion or proposal carefully, no matter how trivial it may seem. Allow enough time to

fully consider each item. Keep the discussion on the agenda and end the meeting when the agenda is covered.

- Assigning action items for issues the committee can't resolve during a meeting.
- Send issues the committee can't resolve at its level to higher management. Work issues at the lowest possible level of management.

c. Keep a log of all action items to include:

- What the committee decided about each item.
- Who is responsible for each item? Contact those who don't respond on time.
- When the committee should get progress reports.
- When the final action is due and, if delayed, why.
- Supporting VPP.

d. Close out an action item only when the committee reaches a final decision and action is taken to complete it.

e. Consider only those matters that a member's supervisor can't or wouldn't take action to resolve. In such cases, the member or the committee chairperson will tell the supervisor what action the committee voted to take.

f. Respond to anyone who makes a suggestion or raises an issue to the committee in writing about the status or outcome of the suggestion or issue.

## **7. What training must safety or health committee members have?**

Committee members must be trained on the activities of the committee and in specific safety and health subjects that apply to the committee.

## **8. Where can I get more information on safety or health committees and councils?**

You can find more information on safety or health committees and councils in these documents:

- a. 29 CFR 1960, subpart F, "Occupational Safety and Health Committees"
- b. 29 CFR 1960, subpart K, "Field Federal Safety and Health Councils"

**9. What are my responsibilities for safety or health committees and councils as a line manager?**

As a line manager, you must:

- a. Form safety or health committees as described in Paragraphs 3 and 4 of this chapter as needed.
- b. Chair safety or health committees.
- c. Encourage your employees to be involved in safety or health committees as members or chairpersons.
- d. Make sure any of your employees who are selected for a committee are trained as described in Paragraph 7 of this chapter.

# Chapter 17

## Measuring the Effectiveness of WFF's Safety and Health Program

### 1. Who must follow this chapter?

You must follow this chapter if you are part of the civil service or contractor line organization at WFF or WFF remote sites.

### 2. What does this chapter cover?

This chapter covers:

- a. The requirements for evaluating the effectiveness of WFF's safety and health program.
- b. The criteria for evaluating the safety and health performance of WFF managers and facility managers.

### *Evaluating the program*

### 3. How does WFF evaluate its safety and health program?

WFF evaluates its safety and health program through self-evaluations by line management and employees using the web based survey tool called Performance Evaluation Profile (PEP) and follow-up by safety and health personnel. The purpose of the PEP is to provide you, a WFF employee, and the Safety Office a way in which to assess our organization's safety and health program and measure its effectiveness. Measurement criteria are based on loss potential as well as actual accident losses. You, as a line manager, and your employees must evaluate your program in the following six areas from the Occupational Safety and Health Administration's (OSHA) Voluntary Protection Program (VPP) guidelines:

- a. Management leadership and employee participation
- b. Workplace analysis
- c. Accident and record analysis
- d. Hazard prevention and control
- e. Emergency response
- f. Safety and health training

Additionally, The Safety Office will evaluate the status of internal and external audit results, Close Call and Mishap reports



#### 4. How will WFF measure the effectiveness of its program?

The results will be provided in a chart like the one below. Generally the safety office will include narrative results to assist in the understanding of your results.



#### Performance Evaluation Profile (PEP)

PEP Score		Management Leadership and Employee Participation				Workplace Analysis			Accident and Record Analysis		Hazard Prevention and Control			Emergency Response		Safety and Health Training	
		Man- agement effectiveness	Participa- tion	Imple- mentation	Com- mitment	Haz- ard recognition	Inspe- ction	Re- porting	Investi- gation	Data analysis	Haz- ard control	Main- tenance	Medical Program	Pre- pared ness	First Aid	Trai- ning	
Outstanding	5															5	
Superior	4															4	
Basic	3															3	
Developmental	2															2	
Absent or Insufficient	1															1	
Score for element																	
Overall Score																	

Mishaps (per 100 employees)		Frequency Rate												TOTAL
		January	February	March	April	May	June	July	August	September	October	November	December	
Civil Service														
Contractor														

Close Calls		Frequency Rate												TOTAL
		January	February	March	April	May	June	July	August	September	October	November	December	
Open														
Closed														

Discrepancies		Frequency Rate												TOTAL
		January	February	March	April	May	June	July	August	September	October	November	December	
Open														
Closed														

\* Frequency Rate

This system will show you improvements you need to make in your program when setting future goals and objectives. Overall, it will establish the Facility's goals and objectives.

#### 5. How does the PEP work?

The PEP works like an assessment instrument that is based on the OSHA Safety and Health Program Management Guidelines that have been widely used in assessing employer safety and health programs. It provides a feedback mechanism that fosters improvement. The narrative description that accompanies the PEP is what you will evaluate your organization against as it applies to your programs,

processes, tasks, and individuals. The Safety Office will use the PEP to evaluate and audit your organization. The objective is to show differences between the internal self-evaluation and the external evaluation. If differences exist, an understanding and analysis of those differences will be necessary in determining the Facilities safety program effectiveness.

## **6. Who is responsible for providing the information?**

You, as a line manager, and your employees must evaluate your safety and health program. This process will include your support contractors.

## **7. How will this information be used?**

The results of the PEP will be used in several ways, such as:

- a. Evaluating safety and health program implementation by line managers.
- b. Determining whether to conduct a focused audit.
- c. Identifying areas of emphasis for continuous improvement.

## **8. How do I score my organization using the PEP?**

The Safety Office will assist you with the administrative details and help you in administering the PEP survey. You will find the PEP at <http://www.egrout.com/> with instructions for use and guidelines. As a contractor and civil service line manager, you and your employees must evaluate your organization using the PEP annually. The Executive Safety Council and the Safety Office will assist with the development of next year's goals. This includes each line organization down to the lowest level -- directorate, division, branch, and section levels to include supporting contractors.

## **9. What happens after I score my organization?**

Once you have submitted your scores electronically onto the PEP Web Page Survey, the database program will gather each individual organization's scores and roll them up by organization and provide them to the directorate management. The database will also provide you analytical reports and metrics if you request them. The reporting charts are available in different formats. You will also get mishap frequency rates, numbers of close calls, and hazard abatement information by month. After your evaluation, the Safety Office will compile its audit, close call and mishap evaluation and provide the complete evaluation package to the Directorate, the Executive Safety Council and the Employee Safety

Committee.

## **10. What do I do with the results?**

Once the results are posted, you must establish your goals and objectives for areas of improvement that are identified from the evaluation. Include completion dates for your goals and objectives. Submit your goals and objectives to directorate management to be included in an overall plan for the directorate. Track the progress of your goals. Review your progress on the previous year's goals and objectives.

The WFF Safety Office will provide a summary self-evaluation and goals to NASA Headquarters, Safety and Risk Management Division.

## **11. What are the scoring criteria based on?**

The narrative description for each scoring element of 1, 2, 3, 4, and 5 is based on OSHA's guidelines and VPP criteria. A score of:

- a. 1 means that there is no safety and health program in place.
- b. 2 means improvement is needed.
- c. 3 is compliance with OSHA.
- d. 4 is beyond compliance (merit status).
- e. 5 is VPP star status.

## **12. What other measures does WFF use?**

WFF also uses lost workday case rates (which include restricted workdays) and incident rates. The rates are the number of cases per 100 employees and are determined by the following formula:

$$\frac{\# \text{ of cases} \times 200,000}{\text{total \# of hours worked}}$$

## *Evaluating managers*

### **13. How will my safety and health performance be evaluated as a WFF manager or facility manager?**

As a civil service manager or facility operations manager, you will be held accountable for meeting your safety and health responsibilities. Authority and responsibility for safety and health protection are clearly defined in your performance plan. Your higher management will evaluate your safety and health performance at least yearly. Your performance standards are as follows:

- a. As a Director of, Deputy Director of, or Assistant Director you will be evaluated on how well you:
- Define your organization's safety and health requirements and liabilities.
  - Make sure your workplace meets all safety regulations that apply.
  - Provide required safety training for your employees and managers.
  - Make sure your employees know the specific hazards in their workplace.
  - Establish and communicate safety responsibilities to your managers and employees.
  - Take actions to reduce personal injury or unsafe use of facilities and resources.
  - Conduct periodic safety assessments.
  - Make sure mishaps are promptly and completely investigated.
  - Make sure corrective actions are taken immediately.
  - Support the WFF Safety Program by supporting and participating in safety councils and committees.
- b. As an office chief or deputy office chief, you will be evaluated on how well you:
- Attend required safety training.
  - Know safety requirements and liabilities.
  - Make sure your employees are aware of the hazards in their workplace, understand needed safeguards, and are trained employees as required.
  - Establish a work environment that meets health and safety regulations.
  - Make sure hazards are promptly corrected.
  - Conduct safety inspections.
  - Take action to reduce personal injury or unsafe use of resources.
  - Discuss safety issues and concerns at staff and group meetings.
- c. As a facility operations manager, you will be evaluated on how well you:
- Attend required safety training.

- Issue and carry out procedures that meet OSHA, NASA, and WFF safety policies and directives.
- Have a system to review plans, procedures, and operations within your facility for hazards to personnel or property.
- Make sure that new or unforeseen hazardous operations or imminent dangers to personnel or property are shut down until risks are clearly understood personnel and corrective actions are taken.
- Coordinate safety plans for potentially hazardous operations with the WFF Safety Office.
- Make sure that mishaps in your facility are promptly reported, investigated, and corrected, and that facility employees get the lessons learned.
- Make sure operating conditions in the facility are safe.
- Conduct safety inspections at least monthly.

**Appendix A**  
**Hazard Communication Program**

## WFF HAZARD COMMUNICATION PROGRAM

### I. PURPOSE AND SCOPE:

This document establishes general policy and procedures for a Hazard Communication Program to inform employees of chemical hazards they may be exposed to in the workplace under normal conditions of use, or in a foreseeable emergency. Under this program employees will be informed of the contents of your work, safe handling procedures, and measures to protect you from these chemicals. The written program is available in the following location: Appendix A of the Wallops Safety Manual.

### II. APPLICABILITY:

The Hazard Communication Program is applicable to all civil servants working at the WFF, including remote facilities and operations, who engage in the use of hazardous chemicals. Employees engaged in the **laboratory** use of hazardous chemicals shall comply with the latest revision of GSFC's Chemical Hygiene Plan (GHB 1790.1) which outlines the requirements of the Occupational Safety and Health Administration's Laboratory Standard, 29 CFR 1910.1450. OSHA requires contractors to also maintain a Hazard Communication Program equivalent to or exceeding federal regulations.

### III. POLICY:

It is the policy of WFF to establish and implement a comprehensive Hazard Communication Program which fully meets the requirements of 29 CFR 1910.1200, the Hazard Communication Standard, promulgated by the Occupational Safety and Health Administration (OSHA). Accordingly, the WFF organizations shall ensure that:

- A. Information on the hazards of chemicals are transmitted to the affected employees (including cryogenic materials and compressed gases);
- B. Inventories of the hazardous chemicals stored or used are maintained and updated regularly;
- C. Material Safety Data Sheets (MSDS's) for hazardous chemicals are maintained in each work area where the chemicals are used or stored and included in the MSDSpro database;
- D. An employee training program is implemented to effectively provide employees with information and handling precautions on hazardous chemicals in their workplace. This training shall be provided at the time of the employees' initial assignment and whenever a new hazard is introduced into the work area; and
- E. Containers of hazardous chemicals are appropriately labeled in accordance with OSHA's Hazard Communication Standard.

#### **IV. RESPONSIBILITIES:**

**A. The Organizational Managers** have overall responsibility for ensuring that the Hazard Communication Program is implemented in his/her areas of responsibility. Additionally, he/she shall:

- (1) Ensure that necessary resources needed to comply with the Hazard Communication Program are available;
- (2) Ensure that line management attends required training and responds to requests for information in a timely manner; and
- (3) Ensure that new employees are appropriately trained and certified.

**B. All Supervisors within the organization shall** identify and acquire necessary resources needed to implement the Hazard Communication Program for their areas of responsibility. Additionally, they shall:

- (1) Develop, implement, and maintain a written Hazard Communication Program specific to their area of authority. The "site-specific" written Hazard Communication Program shall incorporate the requirements outlined in this document;
- (2) Ensure that MSDS's are maintained and that for every hazardous chemical in their area of authority, an updated MSDS is readily available to employees in or near the work locations where the hazardous chemicals are used; and
- (3) Ensure that an accurate inventory of the hazardous chemicals used in the work area is compiled and maintained. An updated inventory list shall be compiled at the beginning of each calendar year.

**C. Line Supervisors** have the responsibility for direct action and enforcement to ensure compliance with the Hazard Communication Program. Line supervisors shall:

- (1) Maintain copies of MSDS's, which are readily accessible to employees on all work shifts, for each hazardous chemical in the workplace;
- (2) Maintain an accurate inventory of the hazardous chemicals used in the work area. Provide an updated inventory list to higher management prior to the beginning of each calendar year;
- (3) Ensure that the containers of hazardous chemicals in the work area are appropriately labeled. Containers without appropriate labels shall be sent back to the supplier unless the contents of the container are definitely known. Where contents are known, the container shall be immediately labeled with the appropriate information
- (4) Attend required hazard communication training. The level of training required will be determined by the extent with which chemical handling by the supervisor or



his/her employees occur. Supervisors whose employees routinely handle chemicals are also required to attend work site specific **Hazard Communication** training;

- (5) Ensure that employees under their supervision attend required Hazard Communication training sessions;
- (6) Train employees on the specific hazards of the chemicals used in the work area. Training shall be conducted at the time of an employees' initial assignment, an employee's change in assignment, and whenever a new chemical, which represents a new hazard, is introduced into the work area;
- (7) Ensure that the personnel not normally assigned to the work area, such as maintenance and contractor personnel, are informed of the hazards of the chemicals to which they may be exposed while present at the job site;
- (8) Enforce safety practices such as using appropriate personal protective equipment (PPE); implement safety precautions and procedures for operations which involve the use of hazardous chemicals; utilize the MSDS's as references; and enforce GSFC smoking policies; and
- (9) Develop operating procedures for each of the routine tasks and known non-routine tasks involving hazardous materials. Ensure that workers review these procedures prior to performing these tasks.

**D. All Employees shall:**

- (1) Read the MSDS's and labels to become familiar with the safety precautions, chemical and physical properties, and potential health hazards of the chemicals prior to handling the chemicals;
- (2) Exercise all necessary precautions in the safe use of hazardous chemicals, including wearing personal protective equipment as specified on the MSDS or recommended by the Safety Office;
- (3) Notify the supervisor of any apparent deficiencies involving hazard communication, such as missing MSDS's, improperly labeled containers of hazardous chemicals, chemicals not listed on the hazardous chemical inventory for the work area, etc.;
- (4) Participate in scheduled training sessions for hazard communication;
- (5) Report all working conditions which may cause substantial personal exposure to hazardous chemicals to a supervisor; and
- (6) Review operating procedures prior to performing tasks involving hazardous materials.

**E. The Occupational Safety Office** or its designated representative has overall responsibility for monitoring this program. Specific responsibilities include but are not limited to the following:

- (1) Provide a written Hazard Communication Program for adoption by each WFF organization;

- (2) Assist managers in determining the level and content of training required by each organization to adequately inform employees of the hazards of workplace chemicals to fully comply with the Hazard Communication Program;
- (3) Audit various WFF organizations to ensure that employees are trained in accordance with the Hazard Communication Program;
- (4) Provide generic revisions of the Hazard Communication Program on an "as needed" basis; and
- (5) Provide technical support to WFF organizations including but not limited to hazard analyses of the workplace, safety inspections and audits, observations and reviews of work practices, procedures, personal protective equipment, and procurements.

**F. Contracting Officers Technical Representatives (COTR's) shall:**

- (1) Ensure that Contractors administer a **Hazard Communication Program** which complies with **29 CFR 1910.1200**, the Hazard Communication Standard promulgated by the Occupational Safety and Health Administration (OSHA);
- (2) Provide Contractors with a copy of the Hazard Communication Program, and ensure that Contractors have access to MSDS's of the chemicals used or stored in the areas where they will perform their stated contractual duties;
- (3) Ensure that Contractors are informed of precautionary measures which need to be taken during the workplace's normal operating conditions and in foreseeable emergencies;
- (4) Verify that Contractors maintain MSDS's on site for hazardous chemicals they use at their work location and that these MSDS's are available for NASA or other Contractor personnel to review;
- (5) Verify that Contractors inform personnel working in areas where they will perform their stated contractual duties of precautionary measures which must be taken, prior to or during the stated work period, to ensure that the contractor's work does not present a health or safety hazard (e.g. a Painting Contractor should notify occupants at least 24 hours prior to painting a room so that appropriate measures may be taken to protect equipment or to relocate personnel who may be affected by odors associated with painting);
- (6) Ensure that Contractors understand that containers of hazardous chemicals which they import or use at WFF are labeled in accordance with the provisions of the OSHA Hazard Communication Standard; and
- (7) Ensure that the Contractors maintain a list of the hazardous materials brought onto the WFF facility.

**G. Contractors are required by OSHA to:**

- (1) Administer a Hazard Communication Program which fully complies with 29 CFR 1910.1200, the Hazard Communication Standard;
- (2) Maintain an inventory and MSDS's for the hazardous chemicals used on-site and

ensure that these MSDS's are readily available for NASA or other Contractor personnel to review;

- (3) Ensure that an inventory of the hazardous chemicals used in the work area is compiled and maintained. An updated inventory list, adding new chemicals and deleting chemicals no longer used, shall be compiled at the beginning of each calendar year. Inventory lists must contain the following information:
  - a. Name of the Contractor.
  - b. Chemical and common name.
  - c. Primary hazardous ingredient, if known.
  - d. Quantity of material.
  - e. Location of chemical stored and/or used (building and room #).
  - f. Manufacturer's name, address and phone number.
  - g. Indication of whether a corresponding MSDS is available for the material.
  - h. Date the list was updated.
- (4) Inform appropriate personnel working in areas where contractual duties are to be performed, such as the use of hazardous chemicals, which may present a health or safety hazard to the occupants. Notification must be made in a timely manner to enable appropriate precautionary measures to be taken; and
- (5) Ensure that containers of hazardous chemicals imported or used at GSFC are labeled in accordance with the provisions of the OSHA Hazard Communication Standard.

## V. LABELING AND OTHER FORMS OF WARNING:

- A. Every container of hazardous materials shall be properly labeled or tagged with the following information:

- (1) Identity of the hazardous material(s) contained.
- (2) Appropriate **hazard** warning including target organ effects; and
- (3) Name and address of the chemical manufacturer, importer, or other responsible party.

- B. Containers without appropriate labels shall be sent back to the supplier unless the contents of the container are definitely known. When contents are known, the container shall be immediately labeled with the appropriate information.
- C. Labels or tags shall be legible, written in English, and prominently displayed on the container. Vats, dip tanks, etc., may be labeled with placards or other signs in close proximity to the vat, dip tank, etc., as long as the contents are clearly understood.
- D. Portable containers into which hazardous chemicals are transferred from labeled containers, and are intended only for the immediate use of the employee who

performs the transfer are exempt from these labeling requirements. These exempt containers should still be labeled with the identity of the hazardous material.

- E. Pipes, ducts, and valves carrying hazardous materials shall be clearly identified.

## **VI. HAZARDOUS MATERIALS LIST AND INVENTORY:**

- A. A hazardous materials list for each work space is required and shall be available to all affected employees. A sample hazardous materials list can be found on Appendix C; however, lists may be kept electronically. This list shall be maintained by the work area supervisor.

(1) The hazardous materials list shall include the hazardous materials within the supervisor's work area which are either stored or utilized by the supervisor's employees. The hazardous materials list shall contain the following information:

- a. Identification of work group or code using the chemicals on the hazardous materials list.
- b. Chemical, common, or trade name as stated on product label.
- c. Quantity of material.
- d. Location where the chemical is stored (Building and Room No.)
- e. Manufacturer's (or responsible party's) name, address and phone number.
- f. Indication that a corresponding MSDS is available for the material.
- g. Date the list was updated.

(2) Supervisors shall update the lists whenever new chemicals are introduced into the work area, or when use of a chemical in a work area is discontinued. The list shall be reviewed for accuracy at least quarterly.

## **VII. MATERIAL SAFETY DATA SHEET (MSDS):**

- A. The material safety data sheet is a document which describes the physical and chemical properties of products, their physical and health hazards, and precautions for safe storage, handling and use. An MSDS is required for each hazardous chemical that is used in the facility. Employees are not required to work with a hazardous material until an MSDS is made available for their review.

- B.** Supervisors are responsible for ensuring that an MSDS accompanies or precedes each initial shipment of hazardous materials. The supervisor shall contact the manufacturer, supplier or distributor to obtain the MSDS prior to using the hazardous material. The Safety and Environmental Branch may be contacted to provide assistance with obtaining the appropriate MSDS.
- C.** MSDS's shall be kept in a central location in the work area which is accessible to employees on all shifts. All employees and affected Contractors shall be informed of the central location where MSDS's are kept.
- D.** MSDS's shall be maintained in a notebook in an organized manner (i.e. alphabetically) so that the MSDS can be readily located and reviewed by an employee when required.
  - (1) MSDS's shall be dated immediately and placed into the notebook upon its receipt. The most current version of the MSDS should be obtained from the manufacturer, supplier or distributor every two years.
  - (2) When the use of a chemical is discontinued, the MSDS's shall be removed from the notebook, notated "**DISCONTINUED**" along with the date use of the chemical was discontinued, and placed in a "discontinued file". The file shall be maintained for at least 30 years to provide a record of employee exposure in the event of future medical complications.
- E.** Although the format for MSDS's may differ from company to company, the OSHA standard 29 CFR 1910.1200 (g) requires that all MSDS's contain information outlined in **Appendix B**.

## **VII. EMPLOYEE TRAINING:**

- A.** Employees who work with, or are potentially exposed to, hazardous chemicals during the normal course of their work, or in a foreseeable emergency, shall receive information and training at the time of the employees' initial assignment, a change in the employees' assignment, and whenever a new hazard is introduced into the employees' work areas.
- B.** Training shall include:
  - (1) The requirements of the OSHA Hazard Communication Standard and employee rights and responsibilities;
  - (2) Operations in employees' work areas which involve the use of hazardous chemicals;
  - (3) The location and availability of the Hazard Communication Program, the hazardous chemical inventories, and the MSDS's of the hazardous chemicals in the work

- area;
- (4) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area;
  - (5) The physical and health hazards of the chemicals in the work area;
  - (6) The measures employees can take to protect themselves from these hazards, such as appropriate work practices, emergency procedures, and use of personal protective equipment; and
  - (7) The contents of the Hazard Communication Program, including an explanation of the labeling system and the MSDS, and how employees can obtain and use the appropriate hazard information.
- C.** Each employee involved in the use and handling of chemical agents or potentially exposed thereto shall receive general training relative to hazard communication requirements. Specific training relative to the hazards of a chemical or chemicals in the work area shall be provided to applicable employees by the workplace supervisor.
- D.** Supervisors whose employees routinely handle chemicals are also required to attend Hazard Communication Training.
- E.** Additional training shall be provided as new information becomes available on a specific agent, when special precautions are needed due to the introduction of new chemicals into the work area, when a change in chemical usage or chemical work practices occurs, or as considered necessary and appropriate to refresh and emphasize potential hazards associated with any given hazardous chemicals.
- F.** Training may be provided on groups of hazardous chemicals in a work area when it is more appropriate to address them as a process or group of chemicals rather than as individual chemicals. For example, in pilot research projects or other operations/processes where many hazardous chemicals are present in small quantities and used sporadically, training can focus on specific groups of hazardous chemicals, such as organic, inorganic, acids, bases, oxidizers, and/or other specific groups rather than on each specific chemical. A basic training course on hazardous chemical safety or similar generalized training, coupled with MSDS and other handout literature, may suffice in some situations.
- G.** In some cases, hazard communication may be incorporated into operating procedures, and may be used to inform employees of the hazards of routine, as well as, non-routine tasks.
- H.** All training shall be documented by the Supervisor. A general training file shall be maintained specifying the names of personnel trained, the date of training, and the type of training. Division or Office Chiefs shall certify that employees have been

appropriately trained.

## VIII. REFERENCES

**A.** Occupational Safety and Health Administration (OSHA), Hazard Communication Standard

**B.** Occupational Safety and Health Administration (OSHA), Laboratory Standard, 29 CFR 1910.1450.

## APPENDIX A HAZARD COMMUNICATION DEFINITIONS

**ARTICLE:** A manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture;

(ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal

conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or a health risk to employees.

**CHEMICAL:** Any element, chemical compound or mixture of elements and/or compounds.

**CHEMICAL NAME:** The scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

**COMMON NAME:** Any designation or identification such as code name, code number, trade name, branch name or generic name used to identify a chemical other than by its chemical name.

**CONTAINER:** Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

**EMPLOYEE:** A worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances



are not covered.

**EXPOSURE OR EXPOSED:** An employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. "Subjected" in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption).

**FORESEEABLE EMERGENCY:** Any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

**HAZARD WARNING:** Any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s).

**HAZARDOUS CHEMICAL:** Any chemical that is a physical hazard or a health hazard.

**HEALTH HAZARD:** A chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.

**IDENTITY:** Any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.

**IMMEDIATE USE:** The hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

**LABEL:** Any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

**LABORATORY SCALE:** Work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. "Laboratory scale" excludes those workplaces whose function is to produce commercial quantities of materials.

**LABORATORY USE OF HAZARDOUS CHEMICALS:** Handling or use of such chemicals in which all of the following conditions are met: (i) Chemical manipulations are carried out on a "laboratory scale"; (ii) Multiple chemical procedures or chemicals are used; (iii) The procedures involved are not part of a production process, nor in any way simulate a production process; and (iv)

Protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

**MATERIAL SAFETY DATA SHEET (MSDS):** Written or printed material concerning a



hazardous chemical which is prepared in accordance with paragraph (g) of 29 CFR 1910.1200, to be provided by the manufacturer, importer, or distributor of the chemical.

**PHYSICAL HAZARD:** A chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

**USE:** To package, handle, react, emit, extract, generate as a byproduct, or transfer.

**WORK AREA:** A room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

**WORKPLACE:** An establishment, job site, or project, at one geographical location containing on or more work areas.

## **APPENDIX B**

### **Material Safety Data Sheet Contents**

#### **(1) Chemical Identity**

- a. If the chemical is a single substance, it should have the chemical, trade, and common name(s).
- b. The chemical identity on the MSDS should be cross-referenced to an identifier found on the label.

#### **(2) Hazardous Ingredients**

- a. If the hazardous chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common names of the ingredients that are associated with the hazards, and the common name of the mixture itself must be listed.
- b. If the chemical is a mixture which has not been tested as a whole (most probable since very few mixtures are tested), all ingredients that are not carcinogens, but are health or physical hazards and comprise 1 percent or more of the mixture, must be listed.
- c. Carcinogens (e.g., OSHA list, IARC Monographs, NTP list) must be listed if they are present in the mixture at levels of 0.1 percent or greater.
- d. All components of a mixture that have been determined to present a physical hazard must be listed.

#### **(3) Physical and Chemical Characteristics**

- a. The physical and chemical characteristics of the hazardous substance reflect the properties of the compound. These include such items as boiling and freezing points, density, vapor pressure, specific gravity, solubility, volatility, and the product's general appearance and odor.

#### **(4) Physical Hazards**

- a. The compound's potential for fire and explosion must be described. This section explains the fire hazards of the product and the conditions under which the product could ignite or explode. Most MSDS's also provide information on recommended extinguishing agents and fire fighting methods.
- b. This section also presents information about other chemicals and substances with which the chemical is incompatible, or with which it reacts. Information on decomposition products, such as carbon monoxide, is included.

## **(5) Health Hazards**

- a. The health hazards of the chemical, together with signs and symptoms of exposure must be listed. In addition, any medical conditions which are generally associated with exposure to the compound, or which exposure to the compound can aggravate, must be included. The specific types of health hazards defined in the standard include: carcinogenicity, corrosives, toxicity, irritants, sensitizers, mutagenicity, teratogenicity, and target organ effects, such as, liver, kidney, nervous system, blood, lung, mucous membranes, reproductive, skin, and eye effects.
- b. The route of entry section describes the primary pathway by which the chemical enters the body. There are three principal routes of entry: inhalation, skin, and ingestion.
- c. This section of the MSDS supplies the OSHA Permissible Exposure Level (PEL), the American Conference of Government Industrial Hygiene (ACGIH) Threshold Limit Value (TLV), as well as other exposure levels used or recommended by the chemical manufacturer.
- d. If the compound is listed as a carcinogen by OSHA, NTP or IARC, it must be so indicated on the MSDS.

## **(6) Special Precautions, Spill, Leak, and Cleanup Procedures**

- a. The standard requires the preparer to describe applicable precautions for safe handling and use which are known. These include recommended industrial hygiene practices, precautions to be taken during repair and maintenance of equipment, and procedures for cleaning up spills and leaks. Some companies also use this section to include useful information not specifically required by the standard, such as EPA waste disposal methods and State and local requirements.

## **(7) Control Measures**

- a. The standard requires the preparer of the MSDS to list any generally applicable control measures. These include engineering controls, safe handling procedures, and personal protective equipment. Information on the use of goggles, gloves, body suits, respirators, and face shields is often included.

## **(8) Emergency and First Aid Procedures**

- a. This part of the MSDS deals with the actions that should be taken in the event of an accidental overexposure. Different procedures are usually given to deal with inhalation, ingestion, skin, or eye exposures.

**(9) Responsible Party**

- a. The standard specifies that the MSDS preparation date or the date of the last change be provided. In addition, the name, address, and telephone number of the chemical manufacturer, importer, or other responsible party preparing or distributing the MSDS must be included.

## HAZARD COMMUNICATION PROGRAM WORK AREA IMPLEMENTATION

### A. PURPOSE AND SCOPE:

This document establishes procedures for implemented a Hazard Communication Program to inform employees in the \_\_\_\_\_ of chemical hazards they may be exposed to in the workplace under normal conditions, or in a foreseeable emergency. Under this program employees will be informed of the contents of your work, safe handling procedures, and measures to protect you from these chemicals. The written program is available in the following location: Appendix A of the Wallops Safety Manual.

### B. APPLICABILITY:

The Hazard Communication Program is applicable to all civil servants working in the \_\_\_\_\_.

### C. POLICY:

It is the policy of WFF to establish and implement a comprehensive Hazard Communication Program which fully meets the requirements of 29 CFR 1910.1200, the Hazard Communication Standard, promulgated by the Occupational Safety and Health Administration (OSHA).

### D. RESPONSIBILITIES:

- a. **The Director of Code** \_\_\_\_\_ has overall responsibility for ensuring that the Hazard Communication Program is implemented in the \_\_\_\_\_ Office. Additionally, the
- b. **The Director of Code** \_\_\_\_\_ shall:
  - (1) Ensure that necessary resources needed to comply with the Hazard Communication Program are available;
  - (2) Ensure that Office staff attend required training; and,
  - (3) Ensure that new employees are appropriately trained to an awareness level.
- c. **The Occupational Safety Office** or its designated representative has overall responsibility for monitoring this program. Specific responsibilities include but are

not limited to the following:

- (1) Assist managers in determining the level and content of training required by each organization to adequately inform employees of the hazards of workplace chemicals to fully comply with the Hazard Communication Program;
- (2) Audit various WFF organizations to ensure that employees are trained in accordance with the Hazard Communication Program;
- (3) Provide technical support to WFF organizations including but not limited to hazard analyses of the workplace, safety inspections and audits, observations and reviews of work practices, procedures, personal protective equipment, and procurements.

**d. Line Supervisors** have the responsibility for direct action and enforcement to ensure compliance with the Hazard Communication Program. Line supervisors shall:

- (1) Maintain copies of MSDS's, which are readily accessible to employees on all work shifts, for each hazardous chemical in the workplace;
- (2) Maintain an accurate inventory of the hazardous chemicals used in the work area. Provide an updated inventory list to higher management prior to the beginning of each calendar year;
- (3) Ensure that the containers of hazardous chemicals in the work area are appropriately labeled. Containers without appropriate labels shall be sent back to the supplier unless the contents of the container are definitely known. Where contents are known, the container shall be immediately labeled with the appropriate information
- (4) Attend required hazard communication training. The level of training required will be determined by the extent with which chemical handling by the supervisor or his/her employees occur. Supervisors whose employees routinely handle chemicals are also required to attend **Hazard Communication** training;
- (5) Ensure that employees under their supervision attend required Hazard Communication training sessions;
- (6) Train employees on the specific hazards of the chemicals used in the work area. Training shall be conducted at the time of an employees' initial assignment, an employee's change in assignment, and whenever a new chemical, which represents a new hazard, is introduced into the work area;
- (7) Ensure that the personnel not normally assigned to the work area, such as maintenance and contractor personnel, are informed of the hazards of the chemicals to which they may be exposed while present at the job site;
- (8) Enforce safety practices such as using appropriate personal protective equipment (PPE); implement safety precautions and procedures for operations which involve the use of hazardous chemicals; utilize the MSDS's as references; and enforce GSFC smoking policies; and
- (9) Develop operating procedures for each of the routine tasks and known non-routine tasks involving hazardous materials. Ensure that workers review

these procedures prior to performing these tasks.

**e. All Employees shall:**

- (1) Read the MSDS's and labels to become familiar with the safety precautions, chemical and physical properties, and potential health hazards of the chemicals to include sign and symptoms of over exposure, prior to handling the chemicals;
- (2) Exercise all necessary precautions in the safe use of hazardous chemicals, including wearing personal protective equipment as specified on the MSDS or recommended by the Safety Office;
- (3) Notify the supervisor of any apparent deficiencies involving hazard communication, such as missing MSDS's, improperly labeled containers of hazardous chemicals, chemicals not listed on the hazardous chemical inventory for the work area, etc.;
- (4) Participate in scheduled training sessions for hazard communication;
- (5) Report all working conditions which may cause substantial personal exposure to hazardous chemicals to a supervisor; and
- (6) Review operating procedures prior to performing tasks involving hazardous materials.

**E. EMPLOYEE TRAINING:**

Supervisors shall oversee the training of employees on the specific hazards of the chemicals used in the work area. Training shall be conducted at the time of an employees' initial assignment, an employee's change in assignment, and whenever a new chemical, which represents a new hazard, is introduced into the work area.

(Person/Position) will verify that all containers received and used in the work area are clearly labeled to identify the contents and the appropriate hazard warnings. Existing labels on incoming containers of hazardous chemicals will not be removed or defaced unless the container is immediately marked with the required information. All employees who transfer hazardous chemicals into portable containers will ensure the containers are appropriately labeled and the contents identified.

Labels will include at least the following information:

- (1) Warning statement, message, or symbol
- (2) Product name
- (3) Manufacturer's name and address

Employees shall be informed of the methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.)

Insert a section on the detection of release. Include chemical(s) and method of detection. [Example: nitrogen displaces oxygen in the air, detection method oxygen sensors are used to detect displacement of oxygen by nitrogen which indicates a nitrogen release to the atmosphere]

Physical (fire, explosion, etc.) and health hazards associated with the chemicals in the work area. The employee will become familiar with the chemicals in their work area by examining the MSDS for these chemicals they will use or come in contact with. Employees who require emergency medical treatment after exposure to a chemical should take a copy of the MSDS to the medical facility.

Show the employee where MSDS sheets are stored and how to use them. Make sure they understand which chemicals they will be using or will come in contact and safety precautions, chemical and physical properties, and potential physical and health hazards of the chemicals to include sign and symptoms of over exposure and conditions to avoid (i.e. do not mix with water)

The measures employees can take to protect themselves from these hazards including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures.

Provide the employee with any written procedures they should be aware of. Inform the employee of emergency procedures including, clean up of small spills, contacting emergency personnel, and building evacuation procedure. Procedures should include engineering controls to be used such as lab hoods or local exhaust ventilation.

Include an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

If your organization takes chemicals out of their original container and places it in a secondary container inform the employee of the labeling system used on the secondary container to identify the product.

CHECK THE CODE 803 WEB SITE AT <http://www.wff.nasa.gov/~code803/pages/WSM2005.doc>

TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.



If work activities are performed by employees in areas where chemicals are transferred through unlabeled pipes the employee shall be informed of the contents of these lines prior to starting work in these areas.

Employees must be informed of the proper personal protective equipment (PPE) required for their work to include when it is required, how to use the PPE, and how to maintain and store it.

The following table can be used as a guide

Example process

Process and Location	Chemicals Involved	Location of MSDS	PPE Required	Spill or Leak Detection Method
Liquid nitrogen transfer in room 112	Liquid nitrogen	Room 112 north wall	-Thermal Protective Gloves -Face Shield -Splash Apron	Oxygen Sensor

## **Appendix B**

### **Hearing Conservation Plan**

# WFF Hearing Conservation Program

## 1.0 APPLICABILITY

This program is applicable to WFF personnel, contractors and subcontractors. This document does not apply to WFF awarded construction contracts acquired through the Contracting Office.

Priority will be given to engineering procedures to the greatest extent practicable to eliminate, control, or isolate sources of hazardous noise.

All personnel who are routinely, occupationally exposed to noise at levels equal to or exceeding the following noise levels will be identified and placed in a hearing conservation program and be required to wear personal hearing protection in accordance with Paragraph 5.3:

- The action level of 80 Decibel A-Weight (dBA), as an 8-hour Time Weighted Average (TWA), for 30 or more days per year; or
- An equivalent TWA of 85 dBA for 8 hours for any 1 day per year; or
- Impact or impulsive noise in excess of the limits listed in Table 2.
- All personnel who enter designated hazardous noise areas or who perform tasks where exposures to continuous noise exceed 85 dBA, regardless of the duration of exposure, will be required to wear personal hearing protection.

## 2.0 REFERENCES

29 CFR 1910.95, "Occupational Noise Exposure."

NPD 1800.2, "NASA Occupational Health Program."

NPR 1820.1, "Hearing Conservation w/Change 1 (3/29/04)"

## 3.0 RESPONSIBILITIES

### 3.1 Supervisors

Supervisors are responsible for the following:

- a. Reporting suspected hazardous noise in all of their areas of jurisdiction to Safety Office.
- b. Supplying Safety and Health personnel and the WFF Health Clinic with the names of personnel working in designated noise hazard areas (or otherwise

exposed to hazardous noise).

- c. Referring personnel who complain of hearing loss or other hearing or ear problems to the WFF Health Clinic for examination and a workplace noise hazard evaluation by Safety and Health Office.
- d. Ensuring the wearing of hearing-protection devices and the implementation of administrative controls where required.
- e. Notifying environmental health personnel of any changes in operations requiring noise determinations or evaluations.
- f. Ensuring the provision and availability of hearing-protection devices, as identified by Safety and Health Office, for use by employees and visitors to hazardous noise areas, as appropriate.
- g. Ensuring that employees who are participants in the Hearing Conservation Program attend required training.
- h. Attending Hearing Conservation Program training.
- i. Assuring that caution signs are posted in designated noise-hazard areas and that appropriate labels are placed on tools and equipment.
- j. Notifying each affected employee of the results of noise dosimetry monitoring.
- k. Ensuring that new employees or employees newly assigned to duties involving hazardous noise receive baseline audiograms before beginning duties. If this is not possible, then ensuring that employees receive baseline audiograms within 30 days of employment.

### **3.2 Individual Employees**

Individual Employees are responsible for the following:

- a. Using effective noise-exposure control procedures, including the proper wearing and maintenance of hearing-protective devices furnished for their protection.
- b. Cooperating with supervisors, medical, and safety personnel in actions to evaluate hazardous noise and to prevent hearing loss caused by excessive exposure to workplace noise.
- c. Notifying supervisors of areas, operations, or equipment that may produce hazardous noise.
- d. Attending required training.

### **3.3 Employee Access**

Copies of this Hearing Conservation Program, 29 CFR 1910.95, Occupational Noise

Exposure (OSHA Noise Standard), and any appropriate records required by this Program will be provided upon request to employees, former employees, representatives of employees, representatives of the U.S. Department of Labor, the National Institute for Occupational Safety and Health (NIOSH), and NASA Occupational Health Program personnel, consistent with the requirements of the Privacy Act, and consistent with the restrictions in the Health Information Management System (HIMS) of records in NASA's "Annual Notice and Amendment to Systems of Records," published in the Federal Register.

#### 4.0 DEFINITIONS

**Action Level** - the sound level which, when reached or exceeded, necessitates implementation of activities to reduce the risk of noise-induced hearing loss. NASA currently uses an 8-hour time weighted average of 80 decibels measured with a sound-level meter on the A-Scale, slow response as the criterion for implementing an effective hearing conservation program.

**Administrative Control** - any procedure that limits noise exposure by control of work schedules.

**Audiogram** - chart, graph, or table resulting from an audiometric test. An audiogram indicates an individual's hearing threshold levels as a function of frequency.

**Audiologist** - a professional specializing in the study and rehabilitation of hearing, who is certified by the American Speech, Hearing, and Language Association, or licensed by a State Board of Examiners.

**Audiometer** - an electronic instrument used for measuring hearing threshold levels that conforms to the requirements and specification of the current American National Standard Institute (ANSI) S3.6-1996.

**Baseline Audiogram** - an audiogram against which future audiograms are compared.

Biological "Functional" Calibration Check - an audiometric test of one or more individuals with known, stable hearing levels used to check the proper functioning and stability of an audiometer and to identify any unwanted or distracting sounds.

**Deafness** - the otological condition in which the hearing threshold level for speech, or the average hearing threshold level for pure tones at 500, 1000, 2000, and 3000 Hertz (Hz) is at least 93 dB (reference ANSI S3.6-1996). This is generally accepted as representing a 100-percent hearing handicap for normal speech.

**Decibel (dB)** - a unit of measurement of sound pressure level.

**Decibel A-weighted (dBA)** - a sound level reading in decibels made on the A-weighted network of a Sound Level Meter (SLM) at slow response.

**Decibels (dB), Peak** - the highest instantaneous sound level measured. Commonly used to measure impulsive or impact noise.

**Engineering Control** - any mechanical device or physical barrier that reduces the sound level at the source of noise generation or along the path of propagation of the noise to the individual. This does not include protective equipment such as earmuffs or plugs and administrative controls.

**Fitness and Risk Evaluations** - evaluations performed by medical, environmental health, and safety professionals for the purpose of determining a worker's ability to perform specific job tasks (fitness) and the likelihood of harm, either to the worker or others (risk), in relation to anticipated workplace exposures and job demands. Fitness and risk evaluations are the processes used to evaluate individuals who, if placed at work in hazardous noise, may not be able to adequately perform essential duties or may pose a health or safety risk to themselves or others.

**Hazardous Noise** - a noise hazard exists wherever any operation, process, or procedure generates noise of sufficient duration and intensity to be capable of producing a permanent loss of hearing to an unprotected person.

**Hertz (Hz)** - a unit of measurement of frequency numerically equal to cycles per second.

**Impulsive or Impact Noise** - variations in noise levels that involve peaks of intensity that occur at intervals of greater than 1 second. If the noise peaks occur at intervals of 1 second or less, the noise is considered continuous.

**Medical Pathology** - For the purposes of this NPR, a condition or disease affecting the ear, which should be treated by a physician specialist.

**Monitoring Audiogram** - an audiometric test obtained at least annually to detect shifts in the individual's threshold of hearing by comparison to the baseline audiogram.

**Noise** - unwanted sound.

**Noise Dose** - a measure of cumulative noise exposure over a stated time period which takes into account both the intensity of sound and the duration of exposure.

**Noise Dosimeter** - an electronic instrument which integrates cumulative noise exposure over time and directly indicates a noise dose.

**Noise-Hazard Area** - any work area with a noise level at or above 85 dBA TWA.

**Otolaryngologist** - a physician specializing in the diagnosis and treatment of disorders of the ear, nose, and throat.

**Permanent Threshold Shift (PTS)** - A change in hearing threshold, primarily due to exposure to high-intensity noise that remains after a lengthy recovery period (over 72 hours).

**Representative Exposure** - measurements of an employee's noise dose or 8-hour TWA noise exposure which is representative of the exposure of other employees in that work area or job classification.

**Revised Baseline** - the most recent audiogram that has established a standard

threshold shift. It will be used as the basis of comparison for future audiograms.

**Sound Level Meter** - an electronic instrument for the measurement of sound levels.

**Sound Pressure Level** - mathematically equivalent to 20 times the common logarithm of the ratio of the measured A-weighted sound pressure to the Standard Reference pressure of 20 micropascals (measured in decibels). For use with this NPG, slow time response is required in accordance with the current ANSI S1.4.

**Standard Threshold Shift (STS)** - an average hearing threshold shift of 10 dB or more at 2000, 3000, and 4000 Hz in either ear. This shift can be either permanent (PTS) or temporary (TTS).

**Temporary Threshold Shift (TTS)** - a change in hearing threshold, primarily due to exposure to high-intensity noise that usually can recover in 14 to 72 hours away from noise exposure.

**Time-Weighted-Average (TWA) Sound Level** - a sound level which, if constant over an 8-hour workday exposure, would result in the same noise dose as is measured.

**Weighted Measurements** - two weighting curves that are commonly applied to measurements of sound levels to account for the way the ear perceives the "loudness" of sounds. A-weighting is a measurement scale that approximates the "loudness" of tones relative to a 40 dB SPL 1000 Hz reference tone. C-weighting is a measurement scale that approximates the "loudness" of tones relative to a 90 dB SPL, 1000 reference tone.



## 5.0 HEARING CONSERVATION PROGRAM REQUIREMENTS

### 5.1 Noise Exposure Limits

- a. The permissible exposure limits for continuous noise are listed in Table 1.

**Table 1**

**Permissible Exposure Limits for Continuous Noise**

<u>Duration (Hours)</u>	<u>dBA*</u>
24.3	77
16	80
8	85**
4	90
2	95
1	100
0.5	105
0.25	110
0.125 or less	115

\*Sound Level in decibels measured on the A-scale of a Type I/II sound-level meter set at "slow response." The exposure noted at each sound level for the duration noted is equivalent to 100 percent of the allowed noise dose.

\*\* No unprotected exposures to continuous noise in excess of 85 dBA are permitted.

b. Unprotected exposure to impact or impulse noise shall not exceed the limits listed in Table 2. No unprotected exposures to impact or impulse noise in excess of 140 dB sound-pressure level are permitted.

**Table 2**

**Permissible Exposure Limits for Impact or Impulsive Noise**

<u>Sound Level (dB) *</u>	<u>Permitted Number of Impacts or Impulses per Day</u>
140	100
130	1000
120	10,000

\* Sound level in decibels measured with a Type I/II sound level meter with peak hold feature using C-weighting or linear at fast response.

c. Exposures should be maintained at or below the action level whenever possible.

d. The action level is equivalent to a noise exposure equivalent to 50 percent of the allowed noise dose and defines one of the criteria for participation in the hearing conservation program.

## **5.2 Engineering Controls**

Where feasible, facilities and equipment will be procured, designed, operated, and/or modified in such a manner as to prevent employee exposure to continuous noise levels above 85 dBA TWA or impulsive noise above 140 dB. Any reduction in employee noise exposure, even if it is not reduced below 85 dBA, is beneficial. If engineering controls fail to reduce sound levels within the limits of Tables 1 and 2, hearing protective equipment and/or administrative methods of noise-exposure protection must be used.

## **5.3 Personal Hearing Protection**

a. Earmuffs and/or plugs will be provided to employees assigned to work in areas

where they will be exposed to continuous noise in excess of 85 dBA without regard to duration of exposure. They will also be provided when employees are working in areas where they will be exposed to impulse noise in excess of 115 dB. Earplugs shall be for the exclusive use of each employee and shall not be traded or shared.

b. Hearing protectors must attenuate employee noise exposure to at least an 8-hour TWA of 85 dBA. A combination of both earmuffs and plugs are required where noise levels equal or exceed 110 dBA. For those with STS, protectors must attenuate exposure to an 8-hour TWA of 80 dBA. Estimation of the adequacy of hearing protector attenuation shall be performed according to 29 CFR 1910.95, Appendix B.

c. The adequacy of hearing protector attenuation shall be reevaluated whenever employee noise exposures increase to the extent that the hearing protector provided may no longer provide adequate attenuation. More effective hearing protectors shall be provided when necessary.

d. Special hearing-protective equipment, such as sound-suppression communication headsets, may be used in noise-hazard areas. These devices should be regularly inspected. Sound-suppression headsets that have been damaged, altered, or modified in any way that affects the attenuation characteristics may not be used. Where replacement parts, such as ear cup seals are available, the headsets may be repaired and reused. Where sound-suppression headsets are not permanently issued to individuals, such equipment must be cleaned and sanitized before re-issuance.

## **5.4 Administrative Control**

Where hearing protective equipment is not sufficient to attenuate noise to less than 85 dBA, the duration of time spent in the noise hazard area will be limited so as not to exceed the exposure limits in Tables 1 and 2.

## **5.5 Exposure Monitoring**

a. Measurement of potentially hazardous sound levels will be conducted when any information, observation, or calculation indicates that an employee may be exposed to a noise level in excess of 80 dBA TWA. This includes, but is not limited to, times where there is a need to document representative noise exposures, where employees complain of excessive noise, or where it is difficult to understand a normal conversation when the speaker and listener face each other at a distance of

2 feet. Any new equipment, operation, job or procedure with the potential for creating hazardous noise should be evaluated with regard to noise emissions prior to startup. All continuous, intermittent, and impulsive sound levels from 80 dB to 130 dB shall be integrated into the noise measurements. Noise-exposure computation is shown in Appendix A of 29 CFR 1910.95.

- 1) Detailed noise analyses (octave band analysis) will be conducted when required to establish the characteristics of the noise source relative to operations in the noise area and to determine appropriate abatement techniques.
- 2) When an initial determination shows that any employee or group of employees (without hearing protection) may be exposed to noise at or above the action level or at or above a single- day TWA equivalent of 85 dBA for 8 hours, noise monitoring will be conducted to determine the noise dose of the exposed employee and the representative exposure of similarly exposed employees.
- 3) For designated hazardous noise areas and where employee exposures exceed the limits of Table 1 or Table 2, noise dosimetry and area monitoring will be repeated whenever any changes to facilities, equipment, work practices, procedures, or noise-control measures alter potential noise-exposures. If there are no changes to facilities, equipment, work practices, procedures or noise-control measures, area noise levels should be randomly sampled every year and noise dosimetry performed on a representative employee at least every 3 years.

b. Employees and/or their representatives will be provided an opportunity to observe noise dosimetry and area monitoring activities.

c. Areas determined to have noise levels at or above 85 dBA must be posted as noise hazard areas.

d. Affected employees will be notified of the results of noise.

## **5.6 Methods of Measurement**

Instruments used to measure workers' noise exposures shall be calibrated to ensure measurement accuracy and, at a minimum, they shall conform to the ANSI Specification for Sound Level Meters, ANSI S1.4-1983 and S1.4A-1985, Type 2 or, to the ANSI Specification for Personal Noise Dosimeters, ANSI S1.25-1991. If a sound-level meter is used, the meter response shall be set at SLOW.

In determining TWA exposures, all continuous, varying, intermittent, and impulsive

sound levels from 80 to 140 dBA shall be integrated into the noise measurements.

### **5.7 Medical Monitoring Program**

a. Whenever an employee is occupationally exposed to continuous noise at or above the action level or at or above a single-day TWA equivalent of 85 dBA for 8 hours, or to impact or impulsive noise in excess of the limits listed in Table 2, the employee will be enrolled in a Medical Monitoring Program. Employee noise exposure shall be determined without regard to any sound attenuation provided by the use of hearing protectors.

b. Each employee placed in a job requiring participation in the Medical Monitoring Program shall undergo a physical examination prior to assignment of duties involving exposure to high- intensity noise. The examination will include a baseline audiogram, a medical examination to determine any preexisting medical pathology of the ear, and a work history to document past noise exposure. The individual must have no apparent or suspected ear, nose, and throat problems that might compromise the validity of the audiogram. When an employee is determined to be suffering from an acute disease of the ear that may compromise the validity of the test, the baseline audiogram will be delayed until the condition has abated.

c. When a physical examination cannot be obtained prior to placement in a job requiring participation in the Medical Monitoring Program or when it is discovered that those already assigned to hazardous noise have not had a physical examination, one shall be conducted within 30 days. The audiogram must be preceded by a period of at least 14 hours during which there is no known exposure to continuous sound levels in excess of 72 dBA or to impulsive/impact noise greater than 120 dB. This time interval should be sufficient to allow recovery from noise-induced temporary threshold shift.

d. Personnel suffering from acute diseases of the ear should not be placed in hazardous noise areas until the condition has abated, particularly if such diseases preclude the wearing of hearing protectors, cause hearing impairment, or produce tinnitus.

e. All employees who are enrolled in the Medical Monitoring Program will receive an annual audiogram.

f. All NASA employees who have participated in the Medical Monitoring Program will receive a final audiometric examination prior to termination of employment, transfer to another installation, or retirement. An annual audiogram, if completed within 6 months of the termination, transfer, or retirement date, may be substituted for the final audiogram.

## 5.8 Audiometric Testing

Audiometric testing will be performed in accordance with 29 CFR 1910.95 Sections g, and h, and Appendices C, D, and E. Rooms used for audiometric testing shall not have background sound-pressure levels exceeding those in Table 3.

**Table 3**  
**Maximum Background Sound Pressure Levels**  
**for Audiometric Test Rooms**

<u>Octave Band</u> <u>Center Frequency (Hz)</u>	<u>Sound Pressure</u> <u>Levels (dB)</u>
500	27
1000	30
2000	35
4000	42
8000	45

## 5.9 Evaluation of Annual Audiogram

a. Each employee's annual audiogram shall be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a Standard Threshold Shift (STS) has occurred. The certified technician performing the test may perform this comparison.

b. If the employee experiences STS, the employee shall be rescheduled within 30 days for a retest to determine if the shift is persistent. The retest shall be preceded

by a period of at least 14 hours during which there is no known exposure to continuous sound levels in excess of 72 dBA or to impulsive/impact noise greater than 120 dB. All personnel with an STS will receive reeducation on the harmful effects of hazardous noise and will be refitted with hearing protection.

c. If the retest indicates a persistent STS, the STS will be considered a Permanent Threshold Shift (PTS), and the employee shall be referred for further medical evaluation.

- 1) Medical evaluation is required to validate the existence of a PTS noise-induced and (or) to determine if further medical referral is required. Audiologist, Otolaryngologist, or other physician shall perform that evaluation. A physician shall make any determination that the noise-induced STS is not work-related or has not been aggravated by occupational noise exposure.

- 2) The criteria in Paragraph 5.10 should be used as a guideline for referral, or a physician may otherwise determine there is a need for further medical evaluation.

- 3) A new reference audiogram shall replace the original reference audiogram when the medical evaluation confirms that the STS is permanent.

d. Any employee assigned a new baseline audiogram shall be scheduled for retest in 6 months to determine if further hearing threshold shifts have occurred. Additionally, the actions described in Paragraph 5.11. Follow-up Review will be done. The employee will be encouraged to use hearing protection for non-work activities involving noise exposures.

e. No employee shall be reassigned a new baseline more than once in their employment at a NASA site. Employees who continue to experience threshold shifts, after having a new baseline established, will be assigned to duties which do not involve exposure to hazardous noise to prevent further hearing impairment.

f. If any employee is determined to have an average hearing loss of 25 dB or more at 2000, 3000, and 4000 Hz, as compared to their original baseline audiogram, the hearing loss will be logged as an OSHA-reportable event. The hearing test technician must ensure that any employee who has been assigned a new baseline has his/her current hearing levels compared to the new baseline audiogram as well as the original baseline.

## **5.10 Referral Criteria**

a. Audiological criteria for referral to an Audiologist for more comprehensive testing

is as follows:

- 1) Average Hearing Threshold Level at 500, 1000, 2000, and 3000 Hz greater than 25 dB.
- 2) Single frequency loss greater than 55 dB at 3000 Hz or greater than 30 dB at 500, 1000, or 2000 Hz.
- 3) Difference in average Hearing Threshold Level between the better and poorer ear of more than 15 dB at 500, 1000, and 2000 Hz, or of more than 30 dB at 3000, 4000, and 6000 Hz.
- 4) Reduction in Hearing Threshold Level in either ear from baseline or previous monitoring audiogram of more than 15 dB at 500, 1000, or 2000 Hz, or of more than 30 dB at 3000, 4000, or 6000 Hz.
- 5) Variable or inconsistent responses or unusual hearing loss curves.

b. Medical Criteria for Referral to a Qualified Physician or Otolaryngologist for more comprehensive testing/examination:

- 1) Presence and persistence of ear pain, drainage, dizziness, severe persistent tinnitus, sudden or fluctuating hearing impairment, rapidly progressing hearing loss, a feeling of fullness or discomfort in one or both ears, unusual or inconsistent audiometric findings or a history of these conditions within the last 12 months.
- 2) When an employee has received an otologic evaluation previously on the basis of failing any of the above criteria, and ear pain, drainage, dizziness, or severe persistent tinnitus develops; or if a significant change in hearing level is observed.
- 3) When an employee suspects that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors.

c. The employee will be informed of the need for an otological examination if a medical pathology of the ear is suspected that is unrelated to the use of hearing protection.

d. When an employee is referred to a specialist by the examining physician, communication of relevant medical data will be provided by NASA upon request.

e. If during the baseline audiogram the employee has a hearing profile equal or



worse than that listed below, then the employee shall receive a fitness and risk evaluation.

Frequency (Hz)	500	1000	2000	3000	4000	6000
Hearing Level (dB)	25	25	25	35	45	45

f. If during a medical evaluation, the employee, for medical reasons, may be identified as not being able to perform their job capably or safely in a hazardous noise environment, the employee shall receive a fitness and risk evaluation.

### **5.11 Follow-up Review**

When a permanent threshold shift is detected, a follow-up review will be conducted.

- a. The employee will be provided (and fitted as necessary) with hearing protectors and trained in their use, when hearing protectors are not currently being used.
- b. The employee will be provided/refitted with hearing protectors offering greater sound attenuation, as warranted, when hearing protectors are already in use.
- c. The employee will be trained/retrained on the hazardous effect of noise and the need to use hearing protection.
- d. The employee's work area will be investigated to determine if work practices, or changes in equipment or procedures, have increased the noise hazard. Abatement actions will be instituted as necessary.
- e. The employee will be reassigned to work in a low noise area, as necessary, to prevent further hearing impairment. These employees will continue to participate in the Hearing Conservation Program.

### **5.12 Signs**

Caution signs that clearly indicate the hazard of high noise levels and state the requirement to wear hearing protection will be posted at the entrance(s) to, or the periphery of, noise hazard areas. Decals or placards with similar statements will be affixed to power tools and machines which produce hazardous noise levels.

### 5.13 Employee Training

- a. Each employee who participates in the Hearing Conservation Program will receive annual training. The training must include, as a minimum, an overview of the NASA Hearing Conservation Program; a review of the effects of noise on hearing (including permanent hearing loss); noise control principles; the purpose of hearing protectors; the advantages, disadvantages, and attenuation characteristics of various types of protectors; instructions on selection, fitting, use, and care of hearing protectors; an explanation of the audiometric testing procedure and the purpose of audiometric testing.
- b. An education program shall be provided for supervisory and managerial personnel of hazardous noise areas and their responsibility in the Hearing Conservation Program will be emphasized.
- c. Personnel shall be encouraged to use hearing protectors whenever they are exposed to hazardous noise during off-duty activities (e.g., lawn mowing, use of firearms).

### 5.14 Records

- a. Audiograms and noise-exposure records shall be maintained as a permanent part of an employee's medical records. When noise-exposure-measurement records are representative of the exposures of other individuals participating in the Hearing Conversation Program, the range of noise levels and the average noise does will be made a permanent part of the medical records of those individuals also. These records will be maintained for the duration of employment plus 30 years in accordance with 29 CFR 1910.1020.
- b. In addition to audiometric test data, each audiogram will, as a minimum, identify the audiometric reference level to which the audiometer was calibrated at the time of testing; the date of the audiogram; the examiner's name; the date of the last calibration of the audiometer; the name, employee number, and job classification of the individual tested; the employee's most recent noise-exposure assessment; and the date of last training received by the individual.
- c. Accurate records of the measurements of the background sound pressure levels of audiometric test rooms and data and information concerning calibration and repair of sound-measuring equipment and audiometers will be maintained for the duration

of employment plus 30 years in accordance with 29 CFR 1910.1020 requirements.

d. Accurate records of noise surveys/monitoring, results of special noise studies, and records of special actions or engineering controls installed to control noise exposures will be maintained for the affected employees for 30 years, in accordance with 29 CFR 1910.1020 requirements.

e. All records will be retained as specified in the applicable records retention schedules for NPR 1441.1.

## **Appendix C**

### **Confined Space Program**

# Wallops Flight Facility

## Entering Confined Spaces

The WFF Confined Space Program provides specific requirements and procedures that meet the OSHA Confined Space Regulation 29 CFR 1910.146 and NASA NPG 8715.3 NASA Safety Manual. The confined space program is a process to ensure that entry into confined spaces is conducted using a standard set of procedures to optimize the safety of personnel entering and working in these spaces.

### 1. Who must follow this chapter?

You must follow this chapter if you:

- Perform or oversee work that involves entering Confined Spaces at Wallops Flight Facility.
- Have responsibilities for buildings or areas that have Confined Spaces.
- Manage personnel that enter, or supervise entry into, confined spaces

### 2. What is a Confined Space?

A Confined space is:

- Not designed for continuously human occupancy,
- Is large enough that a person's body can completely enter and perform work, and
- Has a limited or restricted means of entering or exiting. (Examples include storage tanks, sewers, vaults, crawl spaces, and pits.)

### 3. What must I know about confined spaces?

You must realize and remember that confined spaces are dangerous and have specific requirements for working in and around them. It is also important that you understand:

- Confined Space accidents don't happen often, but when they do, they are usually fatal. Even more alarming is that many confined space accidents involve multiple fatalities.
- Confined spaces are usually poorly ventilated and often contain very dangerous atmospheric hazards not easily identified by sight or smell.
- Confined spaces can contain other serious physical hazards such as energized electrical equipment, moving parts, thermal hazards or pressurized lines that if not eliminated or controlled can cause serious injury or health concerns and possibly death.
- In order to enter a confined space, personnel must be trained to identify, evaluate, and control actual and potential hazards and know the emergency procedures in the event of accidents.
- Confined spaces that contain serious or potentially serious hazards can only be entered when a permit has been issued.

#### **4. What is a Permit Required Confined Space?**

A permit required confined space is a confined space that has actual or potential hazards capable of causing severe injuries, illnesses and possible death. These hazards can be physical and/or atmospheric hazards and can only be entered when a permit has been authorized. Permit Required Confined Spaces pose the greatest hazards and require the greatest range of controls to enter and perform work safely.

Confined Spaces only have to meet one of the following characteristics to require a permit for entry:

- Contains, or has the potential to contain, a hazardous atmosphere as determined by:
  - a. Oxygen levels less than 19.5% or greater than 23.5%
  - b. Flammable/explosive gases, vapors, mists in excess of 10% of its lower Flammable Limit (LEL)
  - c. Toxic chemicals that are above published Permissible Exposure Limits (PEL) or Threshold Limit Values (TLV)
  - d. Any other atmospheric condition that is immediately dangerous to life or health.
- Contains a material or substance that has the potential to engulf an employee such as water or finely divided solid material such as sand, sawdust or grain.
- Has an internal configuration that could cause an entrant to become trapped and/or asphyxiated.

- Contains any other serious safety or health hazard that is immediately dangerous to life and health that could prevent or restrict you from safely exiting the confined space.

## **5. What requirements must I follow to enter a confined space?**

To enter and perform work in confined spaces, WFF has established requirements based on general industry standards. The general industry standards are found in OSHA 29 CFR 1910.146 - Permit Required Confined Spaces. WFF has developed a Confined Space Program that meets these requirements. These requirements include:

- All confined spaces shall be tested and thoroughly evaluated and actual or potential hazards identified prior to entry.
- All hazards must be effectively eliminated or controlled to protect workers entering and working in confined spaces
- All confined spaces must be controlled to prevent unauthorized entry
- All entry into confined spaces containing atmospheric hazards or other serious safety and health hazards shall be conducted by permit only
- Work performed in confined spaces that generate hazards such as hot work, cleaning and coating shall be conducted by permit only
- All equipment used during confined space operations must be approved for use
- Any entry into a confined space must be conducted using approved procedures
- All confined Space personnel must be trained and certified
- All Permit Required Confined Space operations must be supported by trained and certified emergency rescue personnel

## **6. Whom initially identifies, evaluates, and classifies confined spaces?**

It is everyone's responsibility to notify the Safety Office if they suspect a space or area to be a confined space. When a confined space is identified or suspected notify the WFF Safety Office and a designated Safety Office Competent Person (SOCP) will evaluate and classify the space. The SOCP will be an individual(s) trained and experienced in confined space hazard recognition, evaluation and control.

As part of the process the SOCP shall classify the confined space based on the identified hazards and complete an initial confined space hazard assessment. Information obtained through this process will be maintained in a database for future reference. Once confined spaces are classified they shall be posted with danger signs to warn people of the hazards of entering the confined space or secured in such a manner as to prohibit unauthorized entry.



## 7. What other responsibilities does the SOCP have?

The SOCP is also responsible for implementing and administering the confined space program to include:

- Developing and providing Confined Space Training to personnel at the WFF who enter and support confined space work, including entry workers, entry supervisors, Facility Operations and Project Managers.
- Assist organizations in developing local controls and procedures for controlling confined spaces.
- Assist in developing entry plans when requested by WFF Organizations.
- Evaluate and approve specific work processes and provide consultation services to organizations when requested.
- Review the Facility Confined Space Program at least annually. The SOCP will review Entry Plans, assess training needs, review rescue procedures, assess qualifications of entry personnel and supervisors, and review expired and/or revoked entry permits.
- Assist the contracting office by reviewing all new construction projects to identify, evaluate and classify confined spaces.
- Evaluate and approve Confined Space Entry Permits and Entry Plans.
- Periodically inspect Emergency Rescue Equipment, examine rescue personnel qualification, and assist with rescue response drills.
- Evaluate requests to downgrade Permit Required Confined Spaces to Non-Permit Spaces.

## 8. How do I eliminate identified hazards?

Entry Plans will provide the procedures for eliminating and/or controlling hazards within the space. You must make every effort to eliminate all hazards associated with a confined space without entering the space. Some examples would include:

- Preventing unauthorized entry by locking, chaining, or welding closed entry access points such as doors, hatches, or covers.
- Controlling or Eliminating atmospheric hazards by cleaning or flushing contaminants from the space and prevent further introduction of the contaminant into the space by blanking/blinding access points. (Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards).
- Isolating Hazardous energy by way of lock-out/Block-out procedures.
- Protecting entrants from external hazards such as vehicle traffic by closing off

roads to prevent any motor vehicle traffic in that area.

## **9. How do I control identified hazards?**

It is not always possible to eliminate all the hazards, and in those situations where you cannot eliminate the hazards, you must control the hazard to acceptable levels. Some measures to control hazards include:

- Preventing unauthorized entry by posting signs and warnings
- Controlling atmospheric hazards to acceptable levels by purging or inerting.
- Providing continuous forced air ventilation into the space to maintain acceptable atmospheric levels.
- Controlling hazardous energy by tag-out procedures
- Using approved personal protective equipment to control exposure to the hazard
- Protecting entrants from external hazards such as motor vehicle traffic by use of signs, barriers, and/or flagmen.
- Using continuous monitoring equipment to warn of increasing levels of atmospheric hazards
- Using local exhaust ventilation to control emissions from point source operations in a confined space

## **10. What if I cannot eliminate or control hazards to acceptable levels?**

If you cannot fully eliminate or adequately control physical or atmospheric hazards within confined spaces you cannot enter that space under normal circumstances. Uncontrolled hazards present unacceptable risks and may be considered Immediately Dangerous to Life and Health (IDLH) and shall not be entered.

## **11. What hazards would be considered Immediately Dangerous to Life or Health (IDLH)?**

IDLH Hazards can be physical hazards that will immediately cause serious life threatening conditions when personnel are exposed. IDLH Hazards can be atmospheric hazards defined as the maximum concentration from which one could escape within 30 minutes without a respirator and without experiencing any escape impairment or irreversible health effect. Common IDLH hazards include but are not limited to; exposed high voltage electrical wires, Low oxygen levels, high concentrations of toxic substances, oxygen or flammable gases/vapors.

The SOCP can authorize entry only in cases of EXTREME EMERGENCY such as rescue efforts and emergency repairs, and only if the following conditions are met:

- Personnel entering confined spaces with uncontrolled atmospheric conditions are equipped with an approved positive pressure SCBA, harness of a type suitable to permit extraction, a lifeline securely attached to the harness, and other necessary PPE suitable for the conditions and exposures.
- Emergency rescue personnel and any additional life support equipment required for rescue are stationed in the immediately area of the confined space.
- Communications by voice or approved communication equipment are established and maintained between the workers entering the space and attending personnel outside the space.
- Only explosion-proof or intrinsically safe equipment is used where flammable or explosive atmospheres are present. (Reference NFPA 70, Article 504, *Intrinsically Safe Systems*, and Article 501, *Class I Locations*.)

The SOCP and qualified rescue personnel will be present during all known IDLH confined space entry and work periods. The safety official will serve as a safety consultant to the Entry Supervisor in charge of entry.

## **12. If I eliminate all hazards do I still need a permit?**

- If all hazards have been eliminated and verified the confined space can be re-classify as a Non-Permit Confined Space provided the pre-entry evaluation has been completed and the space can be maintained free of hazards for the duration of entry and no hazards will be introduced during the work process. (Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards).

## **13. What are Pre-Entry Evaluations?**

Pre-entry evaluations are part of the entry process and must be completed prior to entry or obtaining a permit. The main purpose of the pre-entry evaluation is to identify the current conditions and hazards within the space and provide input for developing the confined space entry plan.

## **14. What is a downgraded Confined Space?**

A downgraded confined space is a confined space previously classified as a Permit Required Confined Space that has been reclassified or downgraded once it is proven that all actual and/or potential hazards within and around the space have been eliminated and will remain eliminated for the full duration work is being performed.

The practical advantage of re-classifying a permit space is that they can be entered without obtaining a permit and reduce the number of personnel required to assist with the entry. Downgraded confined spaces shall pose no serious hazards or potential hazards while utilizing the least amount of controls.

### **15. Who can downgrade a Permit Required Confined Space?**

A person meeting the qualifications of a competent person (CP) is the only individual who can downgrade a Permit Required Confined Space at WFF. Each organization responsible for performing confined space entries will designate individuals experience in confined space operations and who have receive confined space supervisory level training. Each organization will send a list of qualified individual(s) classified as CP to the WFF Safety Office. Each organization will provide the Safety Office with any updates to their list with 30 days of change. An organization may wish to designate a limited scope CP based on the individuals experience and the level of complexity of the confined spaces being entered. The Safety Office is available to assist an organization in determining and defining an individual's limits of application. The WFF Safety Office will maintain a list of CP and any applicable limitations.

### **16. What are the Organizations Competent Persons Responsibilities?**

- Perform confined space pre-entry evaluations with an emphasis on hazard recognition, evaluation, and control
- Responsible for classifying a confined space as a permit required or non-permit required space based on actual or potential associated with the space and the work to be performed
- Identify necessary controls and procedures for worker safety
- Prepare or assist in the preparation of confined space entry plans
- Provide technical assistance to workers and supervisors during confined space work
- Sign off on Confined Space Permit application as the individual responsible for entry work

- Assist the Safety Office with annual confined space program reviews

## **17. What are Entry Plans and what do they include?**

A confined space may need to be entered by one or more organizations or work groups, all having different tasks to perform for a specific project. To ensure all hazards are accurately identified, eliminated or controlled, and work activities are coordinated, standardized procedures in the form of Entry Plans shall be developed and implemented. All confined spaces are required to have a specific entry plan developed that all groups entering and working inside a space will adhere to. Entry Plans will include:

- The work that you will be conducting in the confined space
- The specific hazards of the space, and how they will be eliminated or controlled
- Identification of work processes that may introduce new or additional hazards into the space and the methods to eliminate or control the hazard.
- Coordination process if multiple work groups are involved. To include: work sequence, communication, data transfer, and identification of roles and responsibilities.
- Emergency response and rescue procedures

## **18. What does the Confined Space Entry Permit provide?**

Entry permits ensure that personnel have taken the required actions that effectively eliminate or control all hazards and potential hazards within the confined space prior to entering. Entry Permits shall:

- Describe the confined space and it's location
- Identify the purpose of the entry
- List the scheduled start and finish dates
- List the entry supervisor, entrants and attendant names
- List all actual and/or potential hazards associated with the space
- Identify how all hazards and/or potential hazards will be eliminated or controlled
- List all safety precautions, emergency procedures and notification requirements
- Record atmospheric test results
- List all procedures and processes that will be conducted during the entry and duration of the work to be performed and associated control measures.
- Provide entry authorization signatures of Entry Supervisor and CP.

**20. Who do Confined Space Entry Permits apply to and how long are they good for?**

The entry permit is authorized for a specific confined space, for a specific purpose, for a specific work crew, and for a specific work period, which will normally not exceed a single shift. If multiple shifts are necessary to complete the work, either a new entry permit must be completed or a continuation must be requested and approved by the CP. All Entry Permits including those that are canceled or revoked are required to be retained for 1 year. The WFF Safety Office will retain all permits for the one-year period.

**21. What do I do with the permit after the work is finished?**

Entry Permits must be closed out after the work is complete or when conditions change during the work that requires the permit to be cancelled or revoked. Once the space is secured and returned to operational status the Entry Supervisor will sign the Entry Cancellation block on the permit and obtain CP concurrence of closure.

**22. What equipment do I need for entering confined spaces?**

The Entry Plan will identify special and personal protective equipment required that provide the necessary level of protection and controls for personnel that enter confined spaces. Only equipment that has been approved shall be used to conduct confined space entry. Equipment may includes

- Personal Protective Equipment (hard hat, safety shoes, etc.)
- Respirators
- Harnesses
- Life Lines
- Tri-pods
- Testing and monitoring equipment
- Ventilation equipment and
- Communication equipment as necessary.

**23. What do I need to know about confined space equipment?**

It is important that all equipment be inspected before use and at regular intervals.

Maintain equipment in the proper working condition and used in the correct manner. Use and care for all equipment according to manufacturer instructions

Equipment used to support confined space operations including testing and life support equipment must be inspected prior to each use. Testing and monitoring equipment shall be the correct type in accordance with NFPA 70 article 500 National Electric Code

Direct reading equipment is required to be calibrated according to manufacture recommendations. The supervisor will also ensure equipment meets required standards of safety as determined by an appropriate Nationally Recognized Testing Laboratory (NRTL) as listed in the OSHA NRTL Program

#### **24. How do I test confined spaces and what do I test for?**

Before entering any confined space, you must test the space for atmospheric hazards in the following order: oxygen content, flammable gas/vapor concentrations and levels of toxic substances. These tests determine if acceptable atmospheric conditions exist before you or other personnel enter the space.

#### **25. When is monitoring of confined spaces required?**

Atmospheric monitoring is required as part of the pre-entry evaluation for all confined spaces. The Entry Supervisor, with assistance from the CP, shall establish the requirement and frequency for additional atmospheric monitoring based on the pre-entry evaluation and the work to be performed and shall note these requirements on the Entry Plan. At a minimum monitoring is required for the pre-entry evaluation and prior to entry or re-entry into the space.

Continuous monitoring of oxygen level, flammable gas/vapor levels, and toxicity levels should be considered for all permit-required confined space operations or when atmospheric hazards are introduced into the space as part of the work process.

#### **26. What is required in the event of emergency situations?**

Before entry into a permit required confined space notify the WFF Fire Department and



provide them with all pertinent information regarding the site and entry conditions. During entry into a confined space classified as IDLH, Emergency rescue support is required on site during the entire entry operation.

If an emergency or perceived emergency arises immediately notify the rescue team and request assistance. In an emergency it is imperative that everyone leave the space immediately. Do not attempt entry rescue unless properly trained and equipped.

Entry Supervisors are required to:

- Ensure Emergency Service personnel are notified and available to support operations prior to entry.
- Emergency procedures including provisions for rescue equipment, are established, implemented and fully briefed to all confined space entry and support personnel prior to entering the space.
- Entry into Permit Required Confined Spaces requires an attendant outside the space for the duration of the entry. The attendant shall have no other duties that will detract from monitoring work activities or hinder notification of emergency personnel in the event of an emergency. If conditions change within a confined space, or an unexpected accident/injury occurs, the attendant shall implement the emergency procedures and immediately notify emergency services, and start non-entry rescue procedures. The entrant shall make all attempts to self-rescue. At no time shall any individual, other than trained emergency rescue personnel, attempt rescue by entering the confined space.

## **27. How do I coordinate Emergency Rescue Services?**

The WFF Confined Space Rescue Team will normally provide rescue services for operations requiring entry into permit-required confined spaces on Wallops Flight Facility. The Entry Supervisor is responsible for:

- Contacting the Rescue Team prior to entering a permit-required confined space, to coordinate emergency rescue assistance and ensure its availability within a reasonable period of time.
- Ensuring procedures are accomplished whenever emergency and rescue procedures are planned.
- Ensuring the rescue team is standing by at the scene for entry into permit-required confined space operations that have hazards classified as IDLH.



## **28. Can my organizations have our own Emergency Rescue Team?**

Organizations may provide their own Emergency Rescue services provided they meet the following requirements:

- Organizational rescue teams are equipped with the proper approved equipment to include PPE, respiratory protection, and rescue and retrieval equipment.
- Organizational rescue teams are trained in confined space entry and rescue procedures to include the use of retrieval and rescue equipment and proper use of any PPE, including airline respirators or SCBA approved for confined space rescue.
- All members of the rescue team are trained in First Aid and Cardiopulmonary Resuscitation (CPR) certified.

## **29. What training must I have if I enter, supervise, or support work in Confined Spaces?**

All confined space personnel are required to be trained and certified in Confined Space requirements and procedures prior to entering confined spaces. This includes personnel who assess confined spaces (CP), enter confined spaces, serve as attendants or supervise entry into confined spaces. A master list of all confined space personnel, and supervisors will be kept on file in the Safety Office. Personnel are required to be re-certified every two years.

## **30. Who else is required to be trained in confined space requirements and procedures?**

Training in Confined Space Awareness and entry requirements are required for Project Managers or Facility Managers that have personnel that enter confined spaces or are responsible for facilities that have confined spaces.

Personnel designated to conduct atmospheric testing of confined space must also be trained in the operation, calibration, and care of the specific testing equipment to be used. Individuals conducting atmospheric tests must be fully qualified to interpret the test results. The tester shall also meet the training requirements for Confined Space Entry Personnel.

## **31. What documentation is required for training?**

All training and certification for confined space and rescue personnel must be documented. The certification shall contain each individual's name and dates of training or retraining and either the initials or signature of the trainer and (or) instructor.

### **32. What do I always need to remember about entering confined spaces?**

- Always know the hazards you face and how to protect yourself from those hazards. Confined spaces need to be thoroughly assessed prior to entry.
- Never work alone and maintain good communications with others
- Never enter a confined space until you have eliminated or controlled all hazards, and met all requirements listed on the Entry Plan, and if required, have a permit authorizing you to enter.
- Carefully examine any work you will be doing in the space to make sure it doesn't introduce or increase hazards in the space. Any work that requires painting, cutting, welding, or cleaning usually introduces hazards and must be evaluated and controlled.
- Only allow the minimum number of personnel necessary to do the job in and around the space.
- Ensure that external hazards are controlled such as traffic control and pedestrian walk ways. Post proper warning signs and barricades to prevent unauthorized entry.
- Never leave a confined space open and unattended.
- Know what you should do and not do in the event of an emergency.

### **33. What steps must I follow to enter Confined Spaces?**

The following steps will assist you in the confined space process. Before entering any confined space, ensure that you:

#### **Step 1. Determine the work required within the confined space**

Prior to obtaining the pre-entry form, identify the specific work that is required within the space such as inspecting, cleaning, repairing, painting, and welding and know the specific hazards associated with the work. Identify any known or potential hazards associated with the space.

## **Step 2. Obtain a Pre-Entry Evaluation Form:**

Contact the WFF Safety Office and obtain a pre-entry evaluation form from the SOCP.

## **Step 3. Complete the Pre-Entry Evaluation:**

The pre-entry evaluation is the first part of the entry plan and must be completed to safely enter the confined space. This evaluation determines the hazards and conditions that currently exist in the space.

### **What to do after the Pre-Entry Evaluation**

**If the space is classified as a confined space only proceed to Step 4.**

**If the space is classified as a confined space only and you will be introducing hazards into the space proceed to Step 6.**

**If the space is classified as a Permit Required Confined Space proceed to Step 5 and attempt to downgrade the space.**

**If the space is classified as a Permit Required Confined Space and cannot be downgraded proceed to Step 6.**

## **Step 4. Confined Space**

### **Step 4.A. No hazards are present and none will be introduced**

If the Pre-entry Evaluation reveals that no hazards are present, and no hazards will be introduced or arise during the course of the work then:

- Document your findings
- Prepare the entry plan
- Receive approval to begin work

### **Step 4.B. Hazards are present and none will be introduced**

If hazards are identified through the Pre-entry Evaluation and it is believed that these hazards can be eliminated then proceed to Step 5 Downgrading the Space. If the hazards cannot be eliminated or hazards will be introduced during the course of the work proceed to Step 6 Permit Required Confined Space.

## **Step 5. Downgrading a Permit Required Confined Space**

### **Step 5.A. Establish hazard elimination and measures**

Specify in the entry plan procedures for eliminating the hazards associated with the confined space. Follow all procedures and verify hazards are eliminated. It is everyone's responsibility to stop the operation if hazardous conditions develop or hazards have not been adequately eliminated.

### **Step 5.B. Downgrading to a non-permit confined space**

To re-classify a permit space, all hazards must be "eliminated" without entering the confined space. If hazards cannot be eliminated then the space will remain, as a permit required confined space. If all hazards are eliminated the permit space may be re-classified as a non-permit confined space. Only a CP may re-classify a permit space to a non-permit space. If space cannot be downgraded proceed to Step 6.

## **Step 6. Permit Required Confined Space Entry**

A permit is required to enter and work in a confined space if it is listed as a permit required confined space and it cannot be downgraded or if hazards will be introduced into the space during the work process.

### **Step 6.A. Downgrade Permit Required Confined Space?**

Evaluate the possibility of downgrading the space to a non-permit required space. If downgrading the space is feasible proceed to Step 5.

## **Step 6.B. Confined Space Entry Permit Form**

Obtain a Confined Space Entry Permit form from the WFF Safety Office SOCP and complete the form.

## **Step 6.C. Prepare Entry Plan**

Prepare a confined space entry plan that details the work to be performed, the hazards present and potential, and the processes and procedures to be used to eliminate or control the hazards. Include method of communication, roles and responsibilities, and emergency response and rescue procedures.

For entry into a permit space with uncontrolled hazards that are considered Immediately Dangerous to Life and Health, Emergency rescue services shall be on-scene during the entire entry operation.

## **Step 6.D. Permit Approval**

Submit the Confined Space Entry Permit Form and the Entry Plan to the WFF Safety Office for review and approval. Ensure the entry plan and permit are posted at the entrance of the confined space.

Step 6.E. Enter confined space in accordance with procedures outlined in the Entry Plan

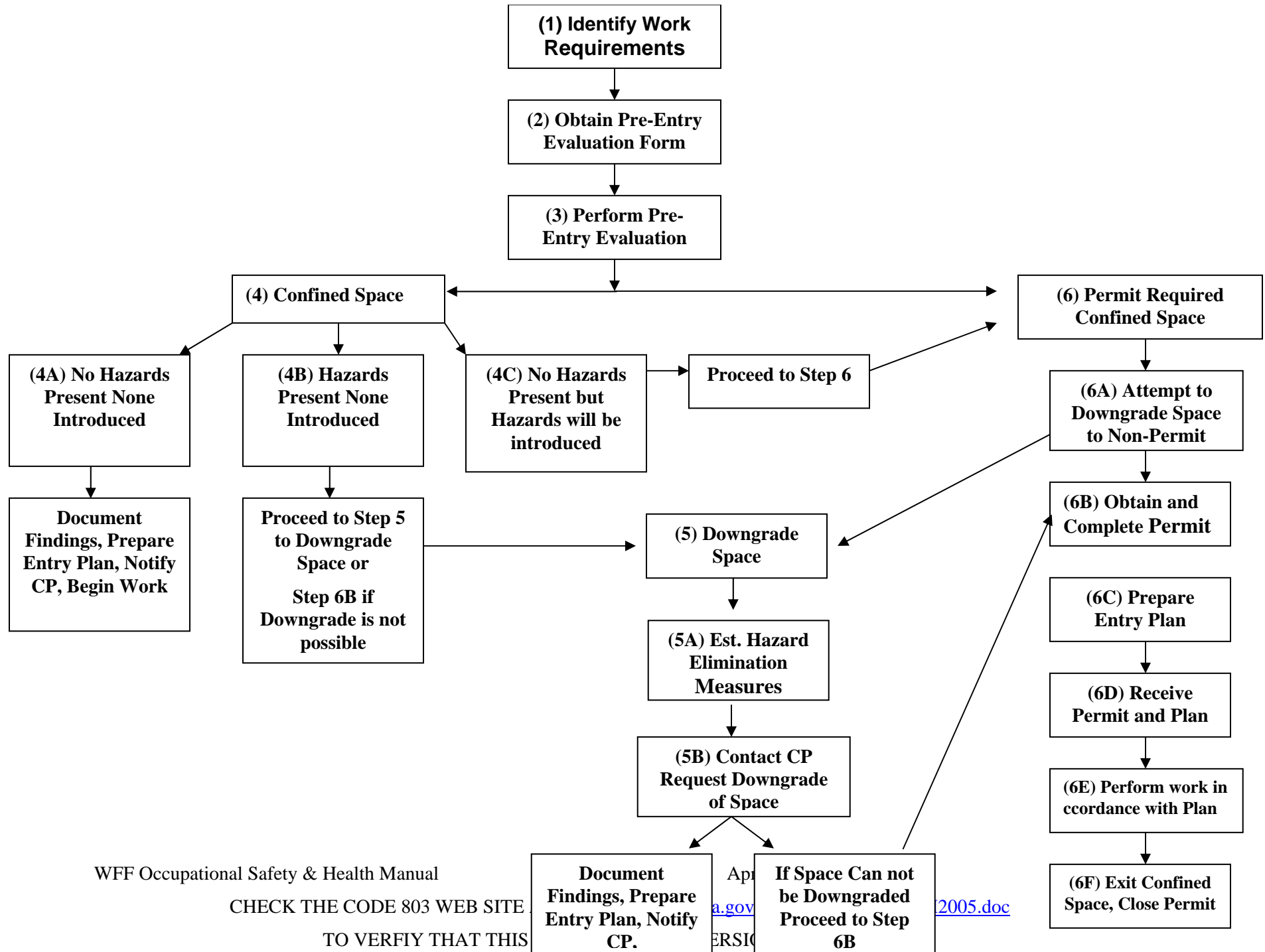
Once all entry requirements have been satisfied, entry may proceed. The entry plan shall require that if conditions change within the space, entry personnel will exit the confined space immediately. Contact the CP and re-evaluate the space to determine why conditions have changed.

## **Step 6.F. Exit Confined Space**

Once all tasks have been completed, the space shall be returned to its original condition (secure the space, remove barriers, etc). The Entry Supervisor shall close out the permit and entry plan with concurrence from the WFF Safety Office. The Safety Office will update the confined space database with the data collected during the entry process. The Safety Office will maintain a copy of the Confined Space Entry information for a period of one year.

# WFF Confined Space Work Process Flow Chart

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## **Appendix D**

### **Contractor Safety & Health Plan Preparation Guidelines**

#### **For Work Conducted At**

**Wallops Flight Facility, Wallops Island VA**

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## **1. Guidelines for Preparation of Safety and Health Plan**

Information and instructions contained in the following pages are provided to assist contractors in preparing their Safety and Health Plan. The plan must be approved by the Occupational Safety Office, PRIOR TO STARTING WORK. Request for exceptions must be made to the Safety Office at 757-824-2559.

All Contractors are required by the Contract to perform their task in accordance with applicable Federal, State, and local laws and regulations as they relate to Safety and Health of employees, the general public, and government personnel and facilities.

As a minimum all contractors are required to comply with provisions of Title 29, Code of Federal Regulations (CPR) Part 1910 - Occupational Safety and Health Standards for General Industry, and Part 1926 - Safety and Health Regulations for Construction.

The Contractor is required to:

Submit a Safety and Health Plan, to the NASA Contracting Officer, and Safety Office. This plan must be approved prior to the start of work. The plan shall be tailored to the specific work that is to be conducted. If you have any questions on completing the plan, contact the safety office at ext. 2030.

Cover page shall contain the companies name; date submitted, project name, and contract number.

The Plan must contain a brief description of the scope of work, and what is required to meet the requirements of the contract. i.e. Installation of transformer – soil excavation 24 inches below grade, backfilling and tamping, concrete pad formed and pored ( 4' x 4' x 16"), transformer set in place by crane, wiring, and etc. The plan must also identify the hazards associated with the work at the site and the process or procedures to be used to eliminate or control the hazards. Example- Mobile Crane operations; hazards may include noise, load shifting or falling, electric line contact; Controls may include hearing protection, hard hat use, employee training, qualified crane operator, insulation of electric lines, an so forth.

Any work that requires modification to existing structures or buildings or digging next to buildings or structures such that the foundation may be affected must be approved by NASA Facilities Management prior to the start of work.

Any work requiring entry into confined spaces must be approved by the safety office 24 hours prior to entering the confined space. The WFF Fire Department can act as the confined

space rescue team. The Fire Department must be notified 24 hours prior to entry into permit required confined spaces.

Any work requiring the disconnection of electrical systems, circuits or components must be approved through Facilities Management prior to. Disconnect and properly locked out and tagged out in accordance with applicable safety standards and NASA requirements.

The Contractor must specify the methods employed to protect Government property and personnel from excessive dust, vapors & fumes, noise, fire, slip, trip and falls, Overhead Hazards, severe weather and other safety hazards during the entire period of the contract. Hazard areas are to be adequately barricaded and controlled to prevent unauthorized personnel from entering.

In the event of injuries the contractor is required to report the injury by phone to the Contracting Officer and Safety Office immediately. NASA form 1627- Report of Mishap, must be completed and submitted to the Safety Office no later than the following work day (within 24 hours).

## **2. SAFETY AND HEALTH RESPONSIBILITY**

Insert in this section the identity of those individuals with safety, health, and accident prevention responsibilities. Describe in detail those responsibilities and the methods in which they will be carried out: Include inspection frequency, what is to be inspected, etc. The goal is to protect Government property and personnel from construction hazards.

Example

a. In order to achieve maximum job safety and efficiency through accident prevention, supervisory personnel must:

(1) Lead, promote, and cooperate in the Safety, Health and Accident Prevention Program. This can be shown by:

(a) Taking the initiative in safe working habits and requiring the same of employees.

(b) Maintaining safe working conditions through daily inspections and enforcement of safety and health regulations and the Company Accident Prevention Plan.

(c) Conducting work place assessments prior to starting a new phase of work.

(d) Thoroughly familiarizing themselves with their Safety and Health responsibilities and all pertinent safety and health requirements.

(2) Review job accident experience for indications of prevalent types of injuries in order to take prompt action to prevent recurrence.

(3) Include job safety planning into the design of job operating methods:

The best time for safe methods planning in accordance with GSFC safety requirements and best safety engineering practices is immediately after the contract has been awarded so that the safety factors are considered along with the plans for materials, equipment, and manpower. Particular attention should be given to ensure that unsafe equipment, including hand and power tools, will not be used.

(4) Ensure adequate employee training as it relates to performance of their duties and safety.

NOTE: The job site supervisor is generally given the overall safety responsibility for the job.

b. A copy of this Plan shall be provided to each foreman and supervisor. Also, a copy of 29 CFR Part 1926 regulations for construction shall be made available to them for study and familiarization. Company management or their designated representative will brief the foreman and supervisors on their safety responsibilities, the hazards involved in their particular work areas and the recommended safety practices for avoiding or minimizing hazards. Workers at the site shall be knowledgeable of the Safety and Health Plan contents. Workers shall know the hazards of their job, how to protect themselves, and what to do in the event of an injury or mishap.

Questions on this section should be addressed to the Occupational Safety Office at Ext. 2030

### **3. HAZARD COMMUNICATION.**

In this section List each hazardous material to be used in the performance of the contract by its generic chemical name and trade names, the approximate quantity and storage method (5 gallon containers, 55 gallon drums, etc.). A Material Safety Data Sheet (MSDS) for each hazardous material must be submitted with the. Safety and Health Plan and made available to all employees in accordance with 29 CFR, Part 1910.1200, "Hazard Communication." You may direct any questions to Ext. 2030 or 2559.

### **4. ENVIRONMENTAL RESPONSIBILITY**

Any questions related to environmental responsibility should be addressed to the WFF Environmental Office at Ext. 1103.

### Hazardous Materials Management

The contractor shall list in the Safety and Health Plan the type, approximate quantity, the person responsible, and the method of management for all hazardous materials and hazardous waste expected to be used and generated. The quantity of hazardous waste generated should be controlled through source reduction and hazardous waste in accordance with all applicable rules and regulations and shall provide records of compliance to the Environmental Office. Hazardous waste disposal is the responsibility of the contractor unless other arrangements have been made through the Procurement Office.

### Hazardous Materials Spills

The contractor shall include in the Safety and Health Plan a basic Hazardous Material Spill Plan when hazardous materials are scheduled to be used. This spill plan shall include any measures to prevent, control, contain, and cleanup a spill for the protection of government property, personnel, and the environment. The contractor shall have appropriate spill kits readily available on site for immediate response to hazardous material releases. All hazardous material spills shall be reported to the WFF Fire Department at 911 (from base phone) or 757-824-1333 (cellular). This number should be a part of the hazardous material spill plan.

### Aboveground Storage Tanks

Contractors bringing Aboveground Storage Tanks (ASTs) with a capacity of greater than 110 gallons onto WFF property shall submit proof of each tank's registration with the Virginia Department of Environmental Quality, Water Division. This proof of registration shall be submitted with the Safety and Health Plan. Possible releases from these ASTs must be addressed in the Hazardous Material Spill Plan. The contractor shall provide impermeable secondary containment for all ASTs brought onto WFF property.

### Erosion and Sediment Control

The contractor shall demonstrate to the government in the Safety and Health Plan how they will control soil erosion and sedimentation as a result of their construction activities. This shall include the prevention of any direct or indirect discharge to wetlands or watercourses.

## **5. ACCIDENT INVESTIGATION AND REPORTING**

This section of the Safety and Health Plan should identify those individuals with the responsibility for investigating and reporting accidents involving personal injuries or property damage. All accidents shall be investigated to the extent necessary depending on severity.

The accident scene must be secured and protection provided to preserve the scene as it was immediately after the accident. WFF Security may be used to accomplish this if necessary.

The contractor shall report all mishaps to the Contracting Officer with a copy of all reports sent to the Occupational Safety Office. The following definitions and reporting requirements should also be included in the Accident Prevention Plan. Direct any questions to Ext. 2030 or 2559.

An Incident is an unplanned occurrence in which the property damage is greater than \$1000 but less than \$25,000, or the injury is less severe than a Type C mishap.

Type C Mishap is an occurrence which results in a lost workday, a restricted duty case or property damage in the amount of \$25,000 but less than \$250,000,

Incidents and Type C mishaps must be reported by telephone immediately and a written report submitted within 5 days.

Type B Mishap is an occurrence which results in permanent disability to one or more persons, hospitalization of 5 or more persons or damage to equipment or property of \$250,000 but less than \$1,000,000.

Type A Mishap is an occurrence which causes death, damage to equipment or property equal to or exceeding \$1,000,000, damage to an aircraft such that it is not economically repairable or damage to space hardware components such that a major mission objective cannot be completed without replacement of the damage part(s).

Type A and B Mishaps shall be reported by telephone immediately and followed by a preliminary report within 24 hours. A Board of Investigation will be appointed for all Type A and B mishaps. NASA or GSFC may conduct a separate investigation; therefore, the contractor must secure the accident scene and provide necessary protection to preclude the loss of evidence.

## **6. EQUIPMENT OPERATOR CERTIFICATION**

This section shall provide information relating to certification of equipment operators such as crane operators, forklift drivers, backhoe operators, welders, explosive-actuated tool users, etc. Certification must be provided by the contractor indicating that employees involved in these activities are qualified to perform such task through specific training and experience.

## **7. FIRST AID AND EMERGENCY SERVICES**

a. The contractor shall comply with the provisions of 29 CFR 1926.50 (OSHA Construction Standards) regarding first aid and medical treatment. This section should identify personnel with first aid training and the company policy regarding medical equipment and services.

b. The WFF is equipped to provide emergency medical services and some other emergency services. The contractor shall identify in the plan, hospital and emergency service providers along with telephone numbers and directions to the facilities. To get WFF assistance in any emergency:

- (1) From any WFF telephone, call 911 (base phone) or 757-824-1333 (cellular).
- (2) State your name and the telephone number you are calling from.
- (3) Describe as precisely as possible the nature of the emergency and the building or area where service is required.
- (4) Determine, with the dispatcher, a location to meet the responding emergency team and send someone to that location.
- (5) Do not hang up until told to do so.

NOTE: Ensure that all employees are made aware of the above procedure.

c. When working in occupied buildings, the contractor must be aware of the building's evacuation plan. All personnel will be expected to evacuate the building during an alarm situation. An emergency egress route shall not be blocked for any reason without prior approval from the Safety Office and building FOM.

Questions on this section should be directed to the Emergency Preparedness Coordinator at Ext. 1498 or 2030.

## **8. SPECIFIC WORK SITE SAFETY PROCEDURES**

The remaining sections of the Safety and Health Plan should be used to address specific safety procedures relative to work being accomplished. Sample subjects are provided below. Simply stating that you will comply with applicable OSHA Standards is not sufficient for the purpose of this Plan.

a. Protection of Government Property, Equipment, and Personnel:

Expand on the methods to control excessive dust, fumes, noise, and severe weather. If construction is one in occupied facilities, show the measures to be taken not to severely decrease the occupants comfort level (ie. shutting down ventilation systems and water supplies). Demonstrate the effort to delineate construction from non-construction areas (ie. posting of signs, use of safety tape, erection of barriers). Describe the methods used to control construction hazards from adversely impacting neighboring facilities, equipment, and personnel.

b. Personal Protective Equipment:

Describe the company's personal protective equipment program, required use of the equipment and the penalty for non-use.

c. Fire Prevention and Protection:

Describe company requirements. Strict adherence to the GSFC "Hot Work Permit" program is mandatory. Contractor must provide all necessary safety equipment (Appendix A).

d. Scaffolds and Ladders:

Describe the size and types to be used and the company requirements for use. Identify personnel responsible for proper erection of scaffolds/ladders.

e. Excavations and Trenches:

Describe company safety requirements. If shoring is required in accordance with OSHA standards, describe type of shoring and personnel responsible for proper installation. Digging permits are required prior to any excavation or trenching at WFF. The contractor is responsible for maintaining any utility markings.

f. Tools:

Describe company policy regarding use and inspection of hand tools and power tools.

g. Compressed Gas and High Pressure Air Systems: Describe company policy regarding use and storage of compressed gas systems.

h. Electrical: All work should be accomplished in compliance with the National Electric Code.

i. Lock Out/tag out: Describe the guidelines by which you will adhere to 29 CFR 1910.147. Identify the tools and equipment you will provide in order to safely lock out and/or tag out hazardous conditions.

Note: The Facilities Maintenance Branch, Facilities Engineering Branch, and Occupational Safety Office must review and approve all plans that involve work to be done with the circuit(s) energized.

j. Housekeeping: Describe the effort you "will use; to keep the worksite clean and hazard free to protect government equipment, facilities, and personnel.

k. Confined Space Program: Describe the guidelines by which you will adhere to 29 CFR 1910.146. Adherence to the WFF "Confined Space Policy" is mandatory. Contractor shall provide all necessary safety equipment and training to employees for program compliance (Appendix B).



The Safety and Health Plan should not be limited to the few subjects noted above. Identify all hazardous or potentially hazardous operations and develop the plan to address those operations. As a guide, the major areas of concern are listed in the Table of ' Contents for Title 29 CPR, Part 1926 (Appendix C). The goal is to keep the worksite safe and to prevent injuries to personnel and damage to facilities.

The completed Safety and Health Plan must be signed and dated by a company official.

Questions should be directed to the Occupational Safety Office at Ext. 2030 or 2559.

## **APPENDIX A**

### **HOT WORK PERMIT PROGRAM**

The contractor shall contact the Facilities Maintenance Branch inspector to obtain a written permit from the Fire Department prior to commencing any burning welding, soldering, open flame cutting, leading operation of tar kettles, salamanders, and any other non-permanently installed heat or fire producing devices. The contractor shall assure that adequate precautionary measures have been taken to protect all personnel and property. Permits will be good from 0800-1630 daily. The permit shall be posted in a conspicuous location at the job site. Permits required after normal working hours, weekends, and holidays shall be requested as soon as the need is known. Failure to maintain the specified fire and safety requirements will result in immediate suspension of such operations.

All contractor employees working with flame or heat producing equipment, such as a propane torch or cutting/welding equipment shall be properly trained and experienced in this type of work.

The contractor shall provide an appropriate size and type of chemical fire extinguisher at each welding, cutting or burning operation and also at each roofing tar pot or kettle. Workers shall be trained in the use of fire extinguishers.

In addition, the contractor shall furnish all barricades, signs, ropes, shields and other guards as appropriate to ensure the safety of workers, WFF personnel and/or the general public, who may be in the vicinity of the work area.

Questions should be directed to the Wallops Flight Facility Fire Inspector at Extension 1300/1707.

## **APPENDIX B**

### **CONFINED SPACE POLICY**

The contractor must maintain a Confined Space Entry Permit (CSEP) when entering any permit-required confined space. A permit-required confined space is an enclosed space that is large enough for a person to enter and perform work, may have limited or restricted means of entry and exit, is not designed for continuous human occupancy has one or more of the following characteristics:

1. Contains or has a potential to contain, a hazardous atmosphere.
2. Contains materiel with the potential for engulfment.
3. Is constructed to make it possible to be trapped or asphyxiated by inwardly converging walls or because a floor slopes downward and tapers to a smaller cross-section.
4. Contains any other recognized, or potentially serious, safety or health hazard.

A permit required confined space can be down graded to a non-permit required confined space provided all hazards have been eliminated and no hazards will be introduce into the space.

NOTE: If none of the above characteristics (1 through 4) exist in the space, it shall be a non-permit required space. Therefore, a CSEP will not be required.

The contractor shall designate a competent person (CP) to evaluate a confined space prior to work in the space. A CSEP must be filled out by the CP and remain at the work site for the duration of confined space work. CSEP's are valid for a single shift (8 hours maximum). The CSEP must be signed by the competent person. The CP must be experienced in confined space operations, trained to recognize, evaluate, and controls hazards, have an understanding of rescue capabilities and atmospheric conditions and testing. The contractor shall certify that the competent person meets the qualifications outlined above.

An Attendant must be present and maintain communication at all times with confined space Entrants, CPR trained, capable of performing non-entry rescue, and have means readily available to summon additional assistance if necessary.

The contractor shall ensure that authorized Entrants, Attendants, and Supervisors receive appropriate training and perform their assigned duties. Their training should include the topics: Hazard recognition, communication, Personal Protective equipment, and Non-entry rescue. Documentation of training should be available at the work site for examination by Safety and Health or Quality Control personnel.

Contractors will provide all testing equipment, personal protective equipment, and non-entry rescue equipment required to perform confined space entries safely and in accordance with State and Federal regulations. This may include such items as: radios, respirators, oxygen sensors, atmospheric testing equipment, sensors, harnesses, tripods, hoists and ventilation equipment.

The Wallops Fire Department and WFF Occupational Safety Office shall be notified 24 hrs in advance of permit required confined space entry work. The Fire Dept. can serve as the entry rescue team provided they are notified. Contact the Fire Dept. in the event of an emergency by call 911 or 757-824-1333

Questions should be directed to the Occupational Safety Office at extension 2030 or 2559.

In the event work must be performed under IDLH conditions the Fire Dept. rescue team must be standing by at the site throughout the duration of entry work. Coordination with the Fire Dept. and Safety Office must be made 24 hrs prior to entry.

## **APPENDIX C**

### **OSHA STANDARDS FOR CONSTRUCTION**

#### **29 CFR, PART 1926**

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**The contractors Safety and Health Plan shall address any and all of the OSHA elements listed above as appropriate for the work to be performed on site.**

**WALLOPS OCCUPATIONAL SAFETY & HEALTH MANUAL (WOSHM-2006)**

Reviewed and approved:

Les A. McGonigal 4/7/06

Les A. McGonigal

Date

Chief Safety Officer